



2004

Regional Trail Inventory and Implementation Guidelines



King County

**Department of
Natural Resources and Parks**

Regional Trail Inventory and Implementation Guidelines

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A VISION FOR REGIONAL TRAILS IN KING COUNTY

To connect the communities within the county, major recreation destinations, and urban centers with a system of trails for recreation and non-motorized transportation that provides for the widest range of non-motorized travel modes and meets accessibility guidelines to the greatest extent possible.

Contents

INTRODUCTION	i
CHAPTER 1: Regional Trail Background and Current Status.....	1
Forward Thrust and the Urban Trails Plan	1
Bicentennial Planning and the General Bicycle Plan	2
Scenic Routes Plan.....	3
1988 Open Space Plan	3
Regional Trails Plan.....	3
Trail Funding History	4
Railbanking	6
Regional Trail Future Project Focus	7
Cost of Trails.....	8
CHAPTER 2: Missing Links	10
Puget Power Extension	11
East Sammamish/Klahanie	12
Issaquah.....	13
Highpoint	14
Snoqualmie Falls	15
Snoqualmie Mill.....	17
Cedar to Sammamish.....	19
Two Rivers	20
Interurban Extension.....	21
CHAPTER 3: Trail Development	22
Sources of Existing Trail Guidelines	22
Shared Use Trail Policy	23
Trail Surfaces	24
Ancillary Trail Facilities	26
Trail Maintenance	28
Accessibility Compliance	30
CHAPTER 4: King County Trails	34
Regional Trail Map	35
Burke-Gilman Trail.....	36
Sammamish River Trail	37
Tolt Pipeline Trail	38
Puget Power (PSE) Trail	39
Snoqualmie Valley Trail	40
Tolt River Trail	41

CHAPTER 4: King County Trails Cont...	
East Lake Sammamish Trail	42
East Plateau Trail	43
Issaquah-Snoqualmie Trail (A)	44
Issaquah-Snoqualmie Trail (B)	45
Cedar-Sammamish Trail	46
Cedar River Trail	47
Green River Trail	48
Interurban Trail	50
Upper Green River Trail	51
Soos Creek Trail.....	52
Lake Youngs Trail and Connectors	53
SR 18 Trail	54
Green to Cedar Rivers Trail	55
Landsburg-Kanaskat Trail.....	56
Enumclaw Plateau Trail	57
CHAPTER 5: Trail Management	58
Existing Ordinance.....	58
Enforcement and Presence	60
Trail Use Surveys.....	60
Trail User Profile	61
CHAPTER 6: Reflections on Future Trail Issues	64
APPENDIX A: Typical Trail Cross Sections	67

Introduction to King County Trails

King County is the provider of one of the largest county trail systems in the United States. The King County Regional Trail System currently comprises nearly 175 miles of improved multi-purpose trails, of a planned 300+ miles of regional trails that accommodates walkers, runners, cyclists, equestrians, and others. An additional nearly 70 miles of right-of-way are within the public domain awaiting improvement. About 60 miles of right-of-way remain to be acquired. The regional trails comprise a major element of King County's open space system and connect urban areas with parks, rural valleys, mountains, as well as other communities. Many of the greenways acquired for trail purposes also provide routes for wildlife movement and help buffer natural areas from development.

The popularity and use of these trails continues to grow dramatically. From the fifth to tenth year of use, the numbers of users doubled. In the next ten years, it has nearly doubled again. The total number of users annually on the Burke-Gilman/Sammamish River trail system alone is approaching 2 million. The regional trails are not only very popular recreation attractions themselves, but also serve a significant number of transportation oriented trips, i.e., commuting, shopping, etc. Regional trails function as conduits between major destinations, and as recreation destinations in and of themselves.

A statewide study in 1991 indicated that people prefer trails close to home and in a natural setting. Yet, 94% of the state's 9,000 miles of trails are in national or state parks and forests far from population centers. The County has begun to address this disparity through the development of the regional trail system. However, the regional trail system is not the total trail network envisioned by the County, rather it is intended to create the backbone of a system that includes neighborhood and community trails as well, whose current inventory in total miles exceeds that of the regional trails. In addition, there are nearly 100 miles of trails within 15 of the county's larger regional parks and preserves.

It is the County's intent that regional trails should be connected by other trails of an informal and formal nature forming a system not unlike the road system with major arterials (regional trails) being connected by secondary arterials and neighborhood streets (community trails). Another significant opportunity for connections besides community trails is the King County Roadshare program. It is unlikely that separated trails can provide all the circulation and access needed or desired throughout the county. The Roadshare Program of King County's Transportation Department could provide the additional connections needed to form a truly integrated system for non-motorized circulation throughout the county. The adopted Non-motorized Transportation Plan, in fact, incorporates the regional trails as a major element of the plan and shows connections at several levels of facility types.

Community trails are the most difficult type of trail to identify, monitor, and preserve. They are primarily informal, soft surface trails, which appear on public and private property throughout the County. Community trails can connect neighborhoods to the regional trail network or provide recreational opportunities separate from the regional system. King County Department of Natural Resources and Parks is working with various trail user and neighborhood groups to identify community trails. While it is not feasible for the County to acquire the total network of community trails, some measure of protection can be provided by the county through the development review process and incentive programs, which provide benefits to property owners who would allow public use of some portion of their property for trail purposes.

The Roadshare Program was established in 1987 to provide for non-motorized transportation facilities within road rights-of-way (r/w) throughout the county and in 1993 the county adopted the Non-motorized Transportation Plan, which guides the provision of such facilities. The program develops permanent, separate and/or shared non-motorized facilities that may range from widened paved road cross-sections to provide acceptable riding surfaces, to entirely separated facilities within road r/w, and from road shoulder improvement to provision of bike lanes.

Some of the highlights of the regional trail system include the Burke-Gilman and Sammamish River Trails, which together allow one to travel from the Fremont neighborhood in Seattle to Marymoor Park in Redmond. The entire 28 miles of trail is paved and offers waterfront and water views of the Lake Washington Ship Canal, Lake Union, Lake Washington, and the Sammamish River and travels from the urban landscape of downtown Seattle to the bucolic landscape of the agricultural preserved lands of the Sammamish Valley. Other trails include the Snoqualmie Valley Trail which, when completed, will stretch nearly 36 miles from Snohomish County to Rattlesnake Lake. The 18 miles of crushed rock and compacted ballast trail that are completed allow exploration of one of the most beautiful valleys in the region. Points of interest along the way include Three Forks Natural Area, Tolt-McDonald Park in Carnation, and the Tokul Trestle and Dead Horse Creek Bridge.

The Interurban and Green River Trails will eventually comprise a system of nearly 50 miles. The Green River Trail is envisioned to span from Seattle's Alki Point to King County's Auburn Narrows Park east of Auburn. The trail would traverse a great variety of land use and experiences from the industrial heart of the Duwamish to the agricultural lands of the upper Green River. The Interurban Trail was once a successful and colorful electric commuter line that ran between Seattle and Tacoma during the early years of the 20th century. It is currently over 14 miles in length and is very popular for commuting to and from all the businesses and attractions along its length.

These are just a few of King County's regional trails. The goal of this plan is to build on these existing trails and provide a plan of connecting these into a system of trails that will interconnect the communities of King County with each other as well as tie in the major recreational attractions. Such a system would primarily serve the citizens of King County and yet make connections to other opportunities beyond its borders.

CHAPTER I

Regional Trail Background and Current Status

History of Past Trail Planning

While trails have been a continuous part of King County's landscape since its beginnings in 1852, planning for trails has been a fairly recent concept. Before there was a road system in early King County, trails provided the means that made connections to isolated geographic areas, communities, and resources that it was desirous to be in contact with. They were an integral part of the transportation of the time. Because of the limited areas of development and settlement, trails were free to take the easiest, most straightforward alignment to make the desired connection.

With the advent of internal combustion transportation and "a car in every garage", roads were built over many of the previous trails. Trails were no longer thought of as part of mainstream transportation, and they began to disappear from the urban landscape. In the contemporary era, many factors have led to the resurgence of interest in trails close to home, an interest whose level of participation has exceeded most other forms of active recreation. Trails provide a means to fitness and exercise; they are a recreational facility that can be used from individuals to families to larger groups; and, they can be a transportation facility providing for a non-polluting, non-congested form of transportation. However, to provide for such facilities in today's built up society, careful planning has to take place to provide for their location, connections, user safety, and management. The remainder of this chapter is a brief recounting of the planning efforts, funding milestones, and other programs that have contributed to the existing regional trails and plans that one sees at the time this is written.

Forward Thrust and the Urban Trails Plan

The first plan that specifically dealt with trail location and development within King County was the *Urban Trails Plan* of 1971. It was a document required as a result of the passage of the Forward Thrust Bond issue of 1968 that provided \$110,000,000 for parks and recreation in King County, \$900,000 of which was set aside for trails acquisition and development. But before any of those funds could be used, the bond resolution required that a trail plan be prepared.

The *Urban Trails Plan* was an ambitious plan that took advantage of many geographic features throughout the county as well as existing linear corridors of many types, e.g., utility, transportation, drainage, etc., to layout the location of the many trails the plan proposed. The layout of many of the potential trails called for in the plan was implementable if they were done at the time the plan was prepared. But as time passed, as little as one year in some cases, opportunities were lost that made some proposed trails unfeasible. Loss of land due to development was the primary cause of lost opportunities. In many cases, the Land Use Management Division of King County attempted to provide for future trails by requiring dedication of certain lands through many plats that appeared to be on the trail routes proposed in the plan. The result of this effort was soon apparent. King County Parks had a growing number of isolated parcels scattered throughout the county for which it became responsible for

management and maintenance, a number that if allowed to continue could seriously affect the Division's ability to effectively manage any of them. They became "orphan lands", not tied to any other park features. Parks stopped accepting these small, lot-sized parcels.

There were nearly 600 miles of trail proposed in the *Urban Trails Plan*. By a set of criteria established in the plan, several trails were called out as the highest priority projects, which were to receive the funding within the Forward Thrust bond allocated to trails. Each was given a small appropriation from the total Forward Thrust allocation amounting from \$30,000 to \$100,000. Unfortunately, none of the appropriation was an adequate amount for development of any of the trails. The top priority trail was the Seattle-Marymoor Trail. This trail provides an example of the possibilities and problems of many of the trails proposed within the plan.

The trail looked fine on paper. It connected Seattle with the fast growing eastside communities via 1-90. It relied on improvements to be made in the future 1-90 construction, open space still available in Bellevue, Kirkland, and Redmond. While the *Urban Trail Plan* was completed by the County, funds were given to each jurisdiction through which it crossed to provide for the trail within its borders. Perhaps because trail planning and development were so new to everyone, too little funds were provided to accomplish the task. The vision remains uncompleted to date, yet many segments are in place today, even if no longer known as the Seattle-Marymoor Trail. Bridlecrest Trail is one such segment, as are the improvements along 1-90, Mercer Sough, and the pedestrian overpass of I-405 near NE 55th Street.

Forward Thrust (FT) and the *Urban Trail Plan* set the foundation for many of the trails found within the existing regional trail network. FT trail funds purchased the Burke- Gilman Trail, the Snoqualmie Valley Trail and contributed to the development of the Interurban Trail, the Burke-Gilman Trail, and the Tolt Pipeline Trail. Other FT funds provided the land for the Sammamish River Trail, the Soos Creek Trail, and portions of the Green River Trail.

Bicentennial Planning and the General Bicycle Plan

The UTP laid out trail possibilities, even if they were too sweeping in scope ever to be realistically accomplished. At nearly the same time, there was tremendous growth in use of the bicycle for recreation, and for a greater use in commuting and transportation in general. To provide planning specifically for that increased use, especially for transportation use, an interdepartmental team in 1974 worked together to produce the *King County General Bicycle Plan* which was an addendum to the just adopted *King County Transportation Plan: Focus 1990*. The focus of the plan was the bicycle and its incorporation into street and highway planning as well as raising its consideration as an alternative mode of transportation in future transportation planning.

A major component of the plan was the location of what were then called 'Class I' facilities. These were separated paved pathways that may or may not be within road rights-of-way (r/w). Many of the Class I facilities came directly from the *Urban Trails Plan*, yet showed how they could tie into a larger network of non-motorized improvements to create a parallel system for alternative transportation. At the same time this planning effort was getting underway, all governmental jurisdictions were being asked to make suggestions for projects that would help celebrate and commemorate the nation wide bicentennial celebration. One suggestion by King County Parks that was accepted by the State Coordinating Committee for the Bicentennial was the identification and creation of a 100-mile bicycle route with the recognition of historic sites along the route to be interpreted.

The idea was called a “centennial” for the bicentennial. Again, it focused a great deal of attention to the possibilities, and growing popularity, of trails and bicycles.

Scenic Routes Plan

Once again, the Forward Thrust Resolution (FT) called for a project that, in the beginning, was not thought to have much to do with trails, but ended up again recommending many new trails around the county. FT provided for the establishment of a series of scenic routes throughout the county. Initially, it was felt that this would consist of designating certain existing roadways as scenic routes and proposing new ones to roughly create a network. However, world events, in the form of the Arab Oil Embargo of 1973, intervened with that thinking. The embargo created a gas shortage in the U.S.A. and created great increases in the price of gas at the pump.

Agencies throughout the U.S. were thinking of different ways to save the use of gasoline. One of those ways affected this plan. The County Policy Review Committee determined that even though the FT resolution required a Scenic Routes Plan be developed, it could not encourage driving for pleasure or develop facilities whose purpose was driving for pleasure. In 1978, the plan was then assigned as a joint project to Transportation Planning and Parks and Recreation.

The conundrum of having scenic routes and not encouraging driving for pleasure was resolved by picking routes with public transportation and making connections via trails. And once again, the Urban Trails Plan and the General Bicycle Plan were used to create one of the overlays by which routes would be chosen.

1988 Open Space Plan

In 1987, after several fits and starts, the *Open Space Plan* began a final push to completion, heading for adoption in 1988. Besides many other aspects of open space, e.g., valuable habitat lands, wetlands, urban separators, etc., the plan included many specific trail corridors. Some of these corridors were not in the *Urban Trails Plan*, the first time any significant departure had been made from that document. These were made to make connections and take advantage of new opportunities not available in the 1971 document. The *Open Space Plan* was the precursor to the *Regional Trail Plan* in its anticipation of updating the *Urban Trails Plan* and provided the basis for another public bond vote by the citizens of King County. In 1989, \$117 million bond issue was passed to purchase open space throughout the county and acquire over 70 miles of regional trail corridors. To reflect the proposed acquisitions within that bond, a new trail plan was needed.

Regional Trails Plan

In the year after the adoption of the *Open Space Plan*, the county open space planners asked that an update of the old *Urban Trails Plan* be prepared for presentation to the County Council. The hope was to have an updated document that specifically showed the final trail projects from the Open Space Plan that would be included in a bond issue to be submitted to the voters of King County. It had to be done in three weeks to meet the deadline for submittal to the council. The time constraint necessitated that a different form of plan take place. It wasn't possible that an update could take in the scope of all trails in King County within that time period.

It was then that the idea of bifurcating the trails into two categories might make the update manageable. The update would only deal with the major, multi-purpose trails, to be planned throughout the county and leave for another document other trails of lesser scope. These major trails were christened 'Regional Trails'.

The regional trails were envisioned to be the "major arterials" of the trail system. They would serve the widest modes of non-motorized users, while being made as accessible as possible. The Plan took advantage of all the previous plans mentioned, as well as several public meetings, to determine which corridors would be selected for inclusion. The Plan was completed in that three-week period, but wasn't adopted by the County Council until October 1992.

Trail Funding History

Over the course of the years, King County has been the recipient of many grants of funds for acquisition and/or development. Several have come from limited and, as it turned out, one time sources. A major source of acquisition and development funds from the beginning of trail establishment in King County has come from the State Interagency Committee for Outdoor Recreation (IAC).

The IAC was originally formed to dispense funds from a statewide recreation bond issue of the late '60's as well as federal funds coming into the state from the Land and Water Conservation Fund (LWCF) and the Housing and Urban Development Open Space funds. The late '60's through the '70's were heady times for grants with the LWCF providing significant funds to the states allowing 75% matching funds with few limits on the amount of funds that could be requested in an application. Since that time, the IAC has had to restrict the size and number of grants, as well as raise the matching percentage required, because of cut backs in receipt of federal funds and the increase in applications. The IAC was a significant funding source for the Sammamish River Trail, the Green to Cedar River Trail, the Green River Trail, the Burke-Gilman Trail, Cedar River Trail, and the Soos Creek Trail.

Since 1991, a major source of funding for acquisition and development of King County's regional trails has come from the federal appropriation for the national transportation programs. In 1991, in re-authorizing funds for the Department of Transportation, Congress expanded the focus of transportation to include funds for non-motorized forms of transportation. These non-motorized transportation elements were provided for under what was known as the enhancement programs within the *Intermodal Surface Transportation Enhancement Act* (ISTEA). The Act provided authorization for funding for a six-year period requiring re-authorization at the end of that period. The Enhancement program was re-authorized in 1997 as the *Transportation Enhancement Act for the 21st Century* (TEA-21). TEA-21 continued the level of non-motorized enhancement funding first set in ISTEA. The trails receiving significant funding from ISTEA and TEA-21 include the East Lake Sammamish Trail, the Cedar River Trail, the Snoqualmie Valley Trail (extension), and the Green River Trail. The reauthorization was due in 2003. However, as of this writing, Congress has yet to do so mid way through 2004 and part of the discussion is whether to include the enhancement programs or not.

There have also been some one time only grants, or grant programs that only had one round and were not reauthorized. King County was the recipient of two such federal grants that were extremely limited in scope and turned out to be one-time only grants. In 1974, the United States was faced with an energy shortage, particularly in gasoline, because of an embargo on oil exported from the Middle East. As a response, the U.S. instituted a number of measures, one of which was to explore alternative transportation modes. To encourage the development of alternative forms of transportation, the U.S. Department of Transportation created an incentive fund that would be made available through application and selection by the department. One of the alternatives to be considered were viable projects that encouraged non-motorized modes that had a strong commuting potential.

Of the four applications King County Parks submitted, the Interurban Trail development was chosen as one of only ten non-motorized trail projects selected nationwide. This program was not continued and this became a one time only funding source.

Another unique grant opportunity presented itself two years later. In 1976, the U.S. Congress passed the Railroad Revitalization and Regulatory Reform Act, known as the 4R Act. Many railroads across the nation were being hard pressed for survival at this time and Congress saw a need to ease some of the regulatory burdens. In addition, railroads were abandoning rights-of-way at an accelerating rate. Congress saw the system of railroads and their rights-of-way (r/w) as part of a national system that could benefit future national defense needs and commerce, and that when railroads were again doing well, that some of these r/w's could be used once again by the railroads. That this system was shrinking alarmingly, and like humpty-dumpty was difficult to impossible to put back together, had the Congress considering ways to preserve much of the system. As a direct means of preserving such r/w's, the 4R act contained language that created a Rails-to-Trails Grant Program. Congress authorized the program at \$20 million, but only appropriated \$5 million. While few states applied for only one grant when they became available in 1978, King County applied for four.

Ten projects were chosen nationwide. Unfortunately, King County was 11th. In late 1979, two funded projects withdrew from the program and King County's Preston-Snoqualmie Trail was added as the ninth and final project.

The 4R grants program occurred at least 5 years before Congress passed the "railbanking act" (see next section), yet it set the stage for what was to come. In order to provide for future viability and expansion of railroads, all the 4R grants retained similar conditions to those that would be required in the Rails-to-Trails Act of 1983. Namely, that all r/w's acquired under the 4R Act are subject to reestablishment of railroad use. In the meantime, King County was the first of the nine grants awarded to complete its project even though it was the last to receive funds. Acquisition and the first phase of development were completed in 1983.

At the same time that the county was applying for the Rails-to-Trails grant, another opportunity appeared from the federal government. From the mid through the late '70's, the nation had been suffering from double-digit inflation leading to a sluggish economy and high unemployment rates. To combat the symptoms of a poor economy, the Carter administration announced the formation of an Economic Development Administration (EDA) that would fund public projects,

among other actions, that would employ the unemployed and help start a stalled economy. King County Parks applied to the EDA for funds to develop the Sammamish River Trail, describing the project as one that would involve the hard hit construction industry while the finished project would provide a corridor for a cheap transportation alternative. The County received \$1million in 1978 that completed the first $8\frac{1}{3}$ miles of an eventual 10-mile trail. The EDA became a casualty of administration changes in the White House and was not renewed. So once again, a potential funding source for further projects became a one time only opportunity for which King County was a fortunate recipient.

Railbanking

In 1983 the Congress of the United States passed an amendment to the National Trail System Act that has become known as the “railbanking amendment” and carried forward the proposals for railroad preservation that was first seen in the 4R Act. Briefly, it allowed railroad rights-of-way (r/w) to be transferred for management purposes to requesting agencies and organizations without the r/w being considered abandoned. The r/w would then be subject to reestablishment of future railroad use. Previously, when a railroad sought a cessation of use, it triggered, in most states, an abandonment, which caused the break up of the r/w to underlying reversionary claimants. As abandoned railroads near urban areas had become very desirable for trail use, their break up caused great difficulty, or in some cases made it impossible, to utilize the r/w for such use.

It took several years after the passage of the amendment for the Interstate Commerce Commission (ICC) to establish the process by which the request and transfer take place. Once in place, its utilization was continuously challenged legally until the U.S. Supreme Court ruled on the statute’s legality in 1991. King County had no less than 8 trails in the Regional Trail Plan that were old railroad rights-of-way. Four of those have since been railbanked.

Briefly, to explain railbanking, freight railroads are regulated by the federal government through the Surface Transportation Board (STB), which replaced the Interstate Commerce Commission in 1995. So long as the federal government has jurisdiction, state law pertaining to railroad operations is pre-empted. A freight railroad ordinarily cannot “abandon”, i.e., permanently terminate common carrier freight service, without STB approval.

Under federal law, a freight railroad almost inevitably can obtain STB abandonment authority if it is losing money providing rail service to a line. Once the rail carrier obtains abandonment authority for a line, and “consummates” that authority (ordinarily by ceasing service, canceling tariffs, and pulling out track and ties), the corridor disappears. The railroad sells off some parcels; other parcels, ordinarily held by easement or base fee, automatically revert to holders of the underlying fee. This renders it extremely difficult to maintain the corridor intact for possible future rail use, a concept known as railbanking, or for other compatible interim uses, such trail, utility corridor, and so forth.

While not wishing to saddle rail carriers, and their shippers, with the costs of non-viable lines, Congress did recognize that rail corridors are national assets that may be extremely valuable for rail transportation in the future, and, in addition, present many excellent opportunities while

awaiting reactivation. As mentioned previously, Congress established the policy of preserving railroad corridors in the Railroad Revitalization and Regulatory Reform Act in 1976, and followed it with a mechanism for such preservation in 1983 with what is known as the federal “railbanking” statute.

That statute, an amendment to the National Trail System Act, provides an alternative to outright abandonment with resultant corridor break-up. Under section 8(d) of that statute, where a government agency or qualified private entity is willing to: a.) assume the costs of corridor preservation, i.e., legal and tax liabilities, if any, and managerial responsibility, b.) keep the corridor intact for future rail use, and c.) provide some kind of trail on the facility, then STB does not issue an abandonment authorization, but instead a “Notice” or “Certificate” of “Interim Trail Use” (NITU or CITU).

The NITU or CITU authorizes the railroad to enter into a voluntary agreement with the “railbanker/trail manager”. If such an agreement is reached, the corridor is railbanked, remains under STB jurisdiction, and is kept intact for the duration of the railbanking agreement, which normally is indefinite in length.

Under STB procedures, a government agency no longer interested in railbanking ordinarily can readily de-railbank the corridor. Furthermore, for a railroad, it is ordinarily far easier to re-start service on a railbanked corridor than to re-assemble an abandoned corridor, or to assemble a new corridor.

Railbanking generally is an attractive, lower cost alternative for keeping a rail corridor intact while at the same time providing, through trail use, an immediate public benefit that serves to justify the cost associated with corridor preservation.

Regional Trail Future Project Focus

The following chapter will focus on the ‘gaps’ in the trail system and the steps necessary to close them. This brief section looks at the sections of the Regional Trail System that are a) already improved and makes recommendations for any upgrading, and b) sections that are acquired and need to be improved at the time of this writing. Chapter III will discuss the long range improvements desired for each trail. These recommendations should be thought of as a “next step” scale of improvements whether that is a final scale of improvements or an interim scale of improvements.

- West Sammamish River – Development of a 10 mile corridor on the left bank of the river including: 2 soft surface trails in most areas, a pedestrian trail along or just away from the river and an equestrian trail further away along the property line, landscaping, and 2 river crossing bridges.

- Sammamish River Trail – Rehabilitation of 6 miles of existing trail to include repaving to 12 feet wide with 2’ shoulders, and reconstructed undercrossings. Much of this work is ongoing.
- Burke-Gilman Trail – Rehabilitation of 2 miles of existing trail to include: widening trail to 12’ with shoulders, add a parallel soft surface trail wherever possible, replace 2 bridges, new retaining walls, and drainage improvements.
- Tolt Pipeline Trail – Develop trail bridge across Snoqualmie River and improve 2 miles of soft surface trail.
- Snoqualmie Valley Trail – Acquire 1 mile of trail r/w, develop 6 miles of RR r/w for soft surface trail and 1 mile of unimproved r/w for soft surface trail
- Preston-Snoqualmie Trail – Extend existing trail 2 miles to connect with the Snoqualmie Valley Trail. Includes deck and guardrail 900’ of trestle, reconstruct 700’ of new trestle, and construct new bridge across the Snoqualmie River.
- East Lake Sammamish – Complete interim trail development followed by development of the 11 miles of R/W 12’ wide paved trail with shoulders and parallel soft surface trail whenever possible
- East Plateau Trail – Development of 4 miles of 10’ wide paved trail
- Cedar to Sammamish Trail – Development of 7 miles of soft surface trail including crossing 900 feet of wetland and bridging May Creek
- Cedar River Trail – Pave 6 miles of 12’ wide paved trail, develop parallel equestrian trail, develop 3 trailhead sites with parking, restrooms, and picnic facilities
- Green River Trail – Complete acquisition of 2 miles of trail r/w in or near Auburn, develop 5 miles of 12’ wide paved trail with 1 river bridge, develop 1 trail access site.
- Soos Creek Trail – Develop 3 miles of 12’ wide paved trail

Cost of Trails

There’s little doubt that the cost of establishing trails has gone up since the development of King County’s first trail, and will continue to rise. It is not just inflation resulting in the higher figures, but now as opposed to the early ‘ 70’s, there are increased mitigation costs and studies,

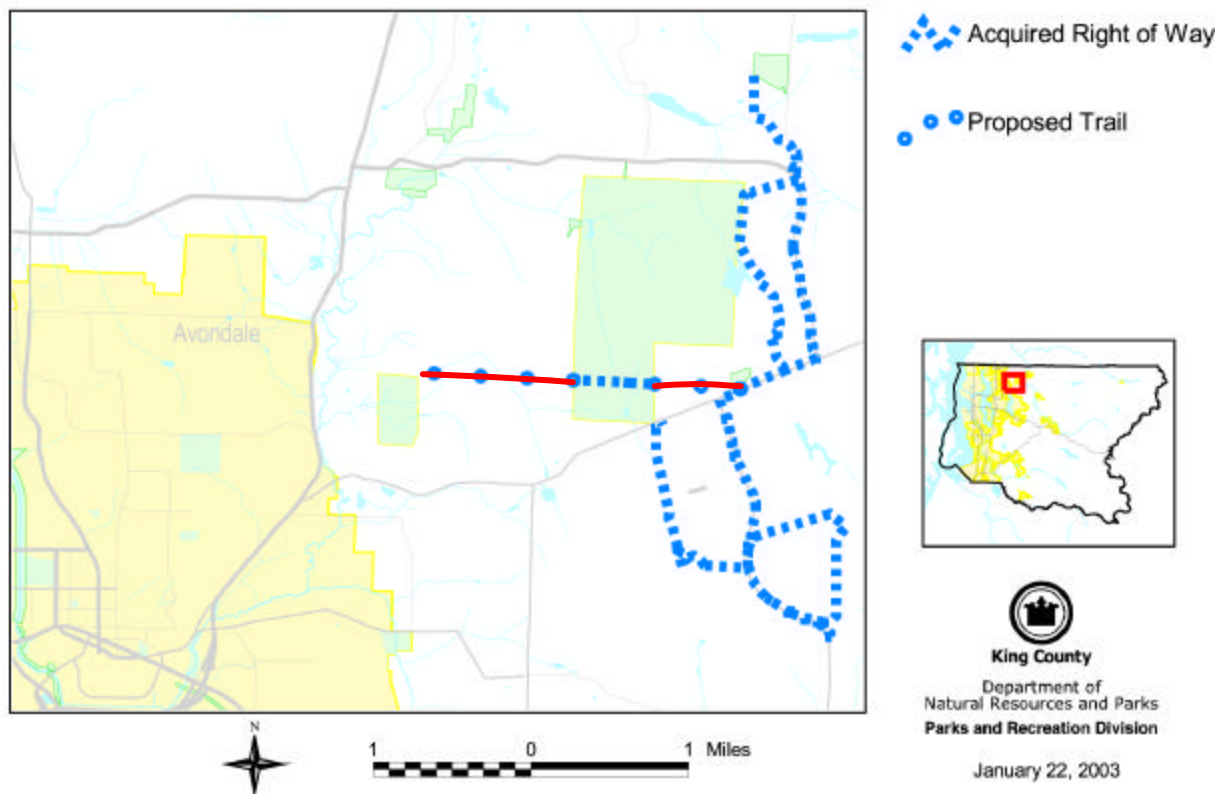
permit requirements for specialized materials and/or methods of construction, and trail cross sections have increased over 50% since then as well. Where it was possible to generally indicate that average trail construction cost per mile was between \$100,000 and \$200,000 per mile, we're now seeing such costs at \$400,000 to \$700,000 per mile with specialized construction sections at over \$1,000,000 per mile. With these costs in mind, total estimated build out of the trail system encompassed in this plan, to complete development of those trails that are as yet undeveloped or require further development, could approach nearly \$100,000,000. Estimated acquisition to acquire remaining trail sections is estimated between \$7,000,000 and \$10,000,000. Thus, an estimate in 2004 dollars to complete the entire plan as called for in these pages may range around \$110,000,000.

CHAPTER II

Missing Links

The regional trail system for King County is planned to be an interconnected system of multi-purpose trails providing access to most communities within the county and selected connection points to adjacent counties. Until the plan is fully implemented, there remain uncompleted sections of the system. This chapter will focus on those ‘missing links’ and discuss their current status, location, and commitments/actions taken to date. It will then discuss current thinking and suggestions for closing those gaps including suggested routes, agencies involved, and potential alternatives. The routes in red shown on the maps indicate the “missing links”.

Puget Power (PSE) Extension

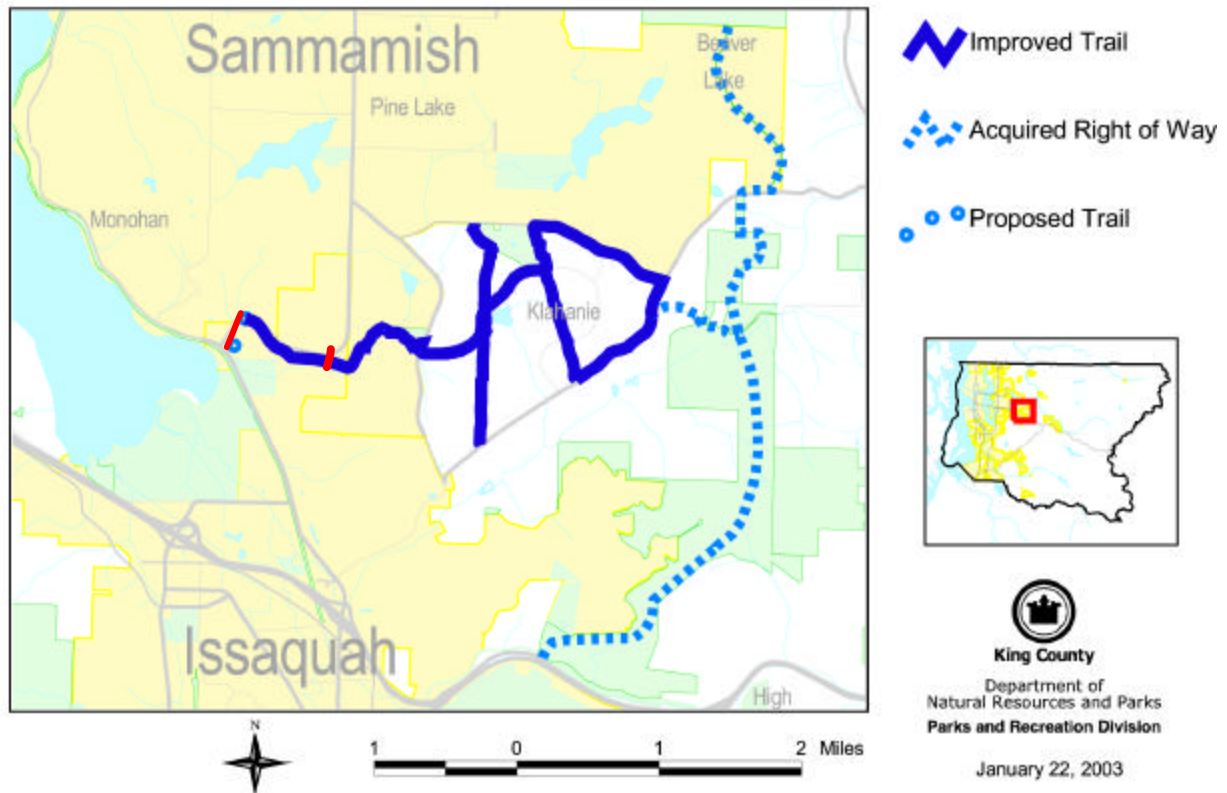


History: This link is the proposed trail located on the Puget Power (now Puget Sound Energy) right-of-way between Redmond's Farrell-McWhirter Park and the Trilogy UPD (formerly Blakely Ridge) east of the Redmond Watershed. It extends the existing trail that begins at the Sammamish River and continues through Farrell-McWhirter and connects it to the trail improvements conditioned on the development of Trilogy.

Status: The acquisition of this r/w was funded as a project in the 1989 Open Space Bond program and is known as the Redmond-to-Redmond Watershed project. King County and Puget Power have been in extended negotiations over an agreement that would allow use of the r/w for trails. Puget Power desires to negotiate an omnibus agreement covering all the rights-of-way we desire from them including this one. We appear to be near overall agreement.

Responsible Agency: Parks and Capital Projects and Open Space Acquisition Section(CPOSA)

East Sammamish/Klahanie

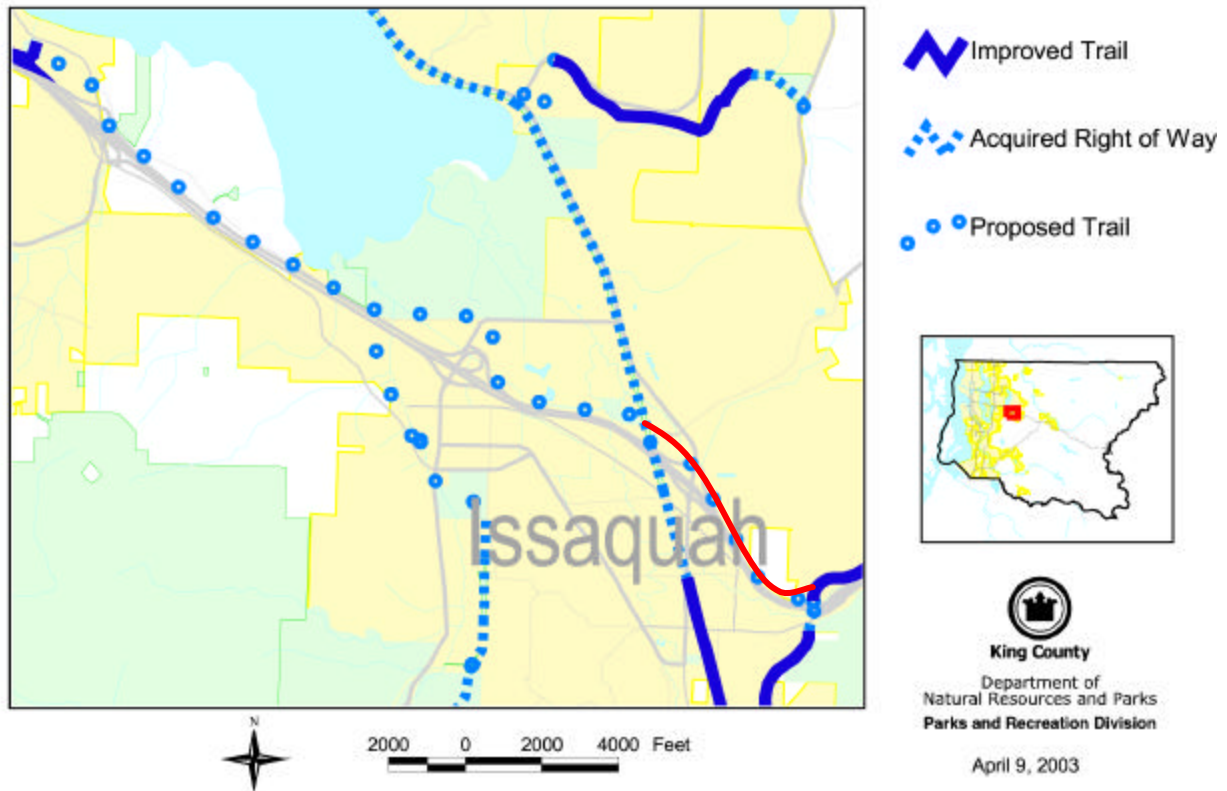


History: This trail for most of its length follows an old logging grade that was acquired by the local water and sewer district and now has a major sewer main along most of its length. Most of the r/w has been acquired under funds provided by Open Space funds. There is one parcel remaining abutting East Lake Sammamish Boulevard. In addition, the route across the Providence Point II property has yet to be finalized. There are issues to be worked out in regard to privacy of the homeowners and public use of the old r/w for trail purposes.

Status: The owner of the last remaining parcel has submitted development plans for the property. The developer has indicated a willingness to dedicate a trail right-of-way through his development. As of this writing, the negotiations for that dedication are currently ongoing.

Responsible Agency: Parks

Issaquah

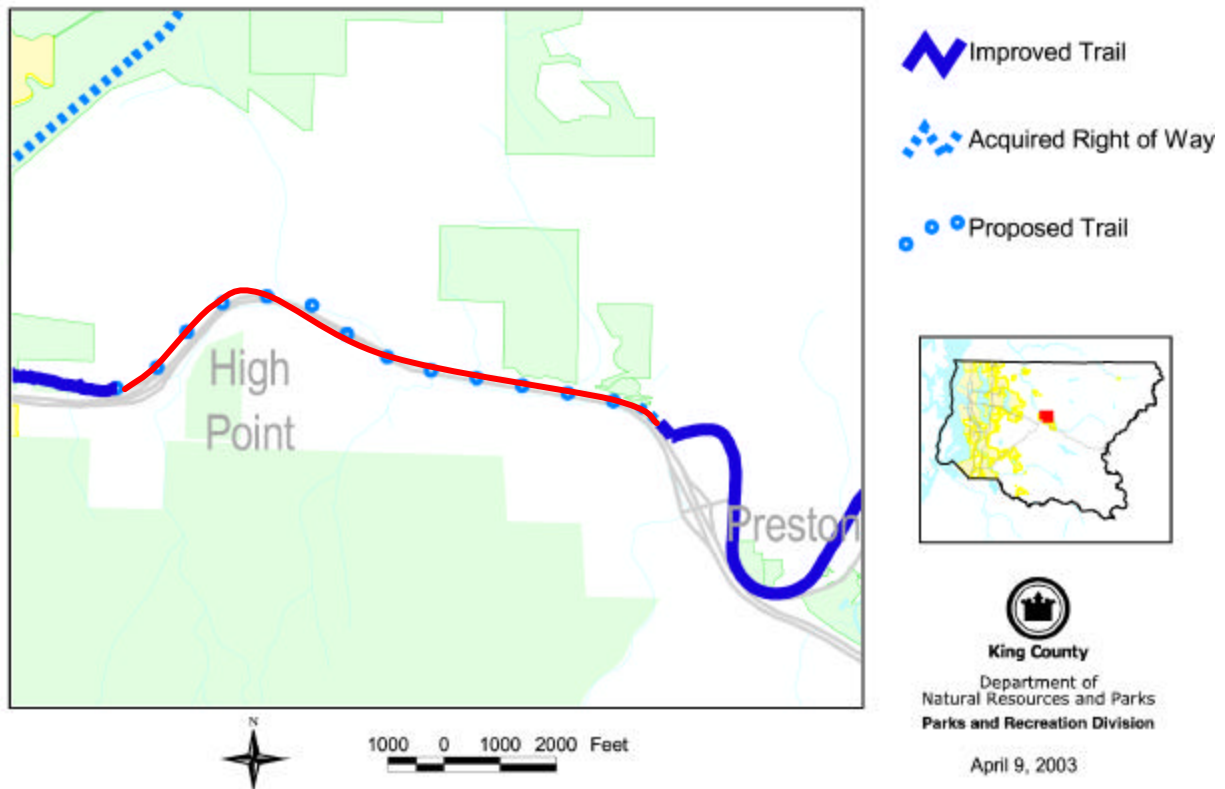


History: This is the link connecting the East Lake Sammamish Trail with the Issaquah to Snoqualmie Trail, the first section of which currently exists between the Sunset Interchange and High Point, an almost two mile segment. Some planning and decisions are being made now that could affect the future of this link. The state DOT, Issaquah, and King County are currently coordinating planning and development of this corridor.

Status: The route currently under discussion is one parallel and within the I-90 right-of-way. The East Lake Sammamish would continue south through Issaquah, loop around the high school and return north to I-90 at the Sunset Interchange. This route is one that the City of Issaquah intends to improve.

Responsible Agency: Parks

Highpoint



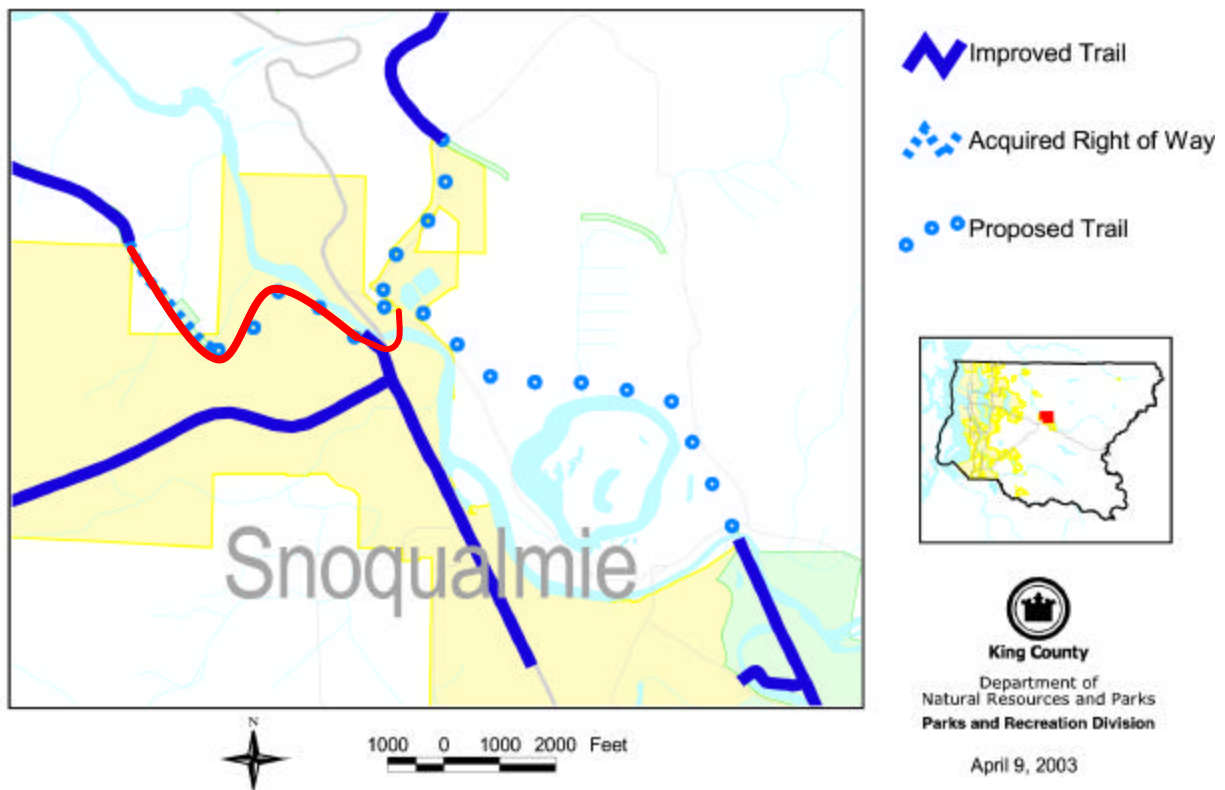
History: In the mid-70's WSDOT purchased the old Northern Pacific r/w from Issaquah to Preston for development of I-90. They didn't need the grade itself from Issaquah to Highpoint. The State DOT has since begun to plan for the extension of a trail to connect through this alignment within the state r/w on the north side of I-90.

Status: The WSDOT has completed, as of this writing, 60% of the engineering plans needed for this connection. Continued coordination between the state, Issaquah, King County and the Mountains to Sound Greenway are ongoing.

Responsible Agency: Parks

Snoqualmie Falls

History: In 1980 when we acquired the western portion of the Preston/Snoqualmie Trail, we also acquired two trestles on Puget Power (now Puget Sound Energy) property south of the falls. Puget Power (PSE) cut down these trestles despite our protests making the completion of the trail to Snoqualmie problematic. PSE initially said that they did not want a trail to go through their Falls facilities, however they were willing to allow a route that went across the plateau to come out near Kimball Creek and SR202. King County designed and engineered a route approved by PSE in the field. However, PSE would not sign an agreement to this route and stalled us for several years. Why they did so became apparent when PSE and Weyerhaeuser announced a land exchange giving Weyco the land across which we had designed our trail. This land became Snoqualmie Ridge. In the interlocal agreement between King County, City of Snoqualmie and Weyco, Snoqualmie Ridge was responsible to build the regional across that development. However, because of Weyco's plans for a championship golf course on the site, they did not want as trail crossing the course and supported reestablishing the trail on the old railroad r/w. They even did an engineering study examining the costs of replacing the lost trestles.



There were several meetings between King County, Snoqualmie, PSE, and Weyco in the 80's and consistently PSE took the position that they would not participate in rebuilding the trestles. That is until they applied for re-licensing their falls generating facilities.

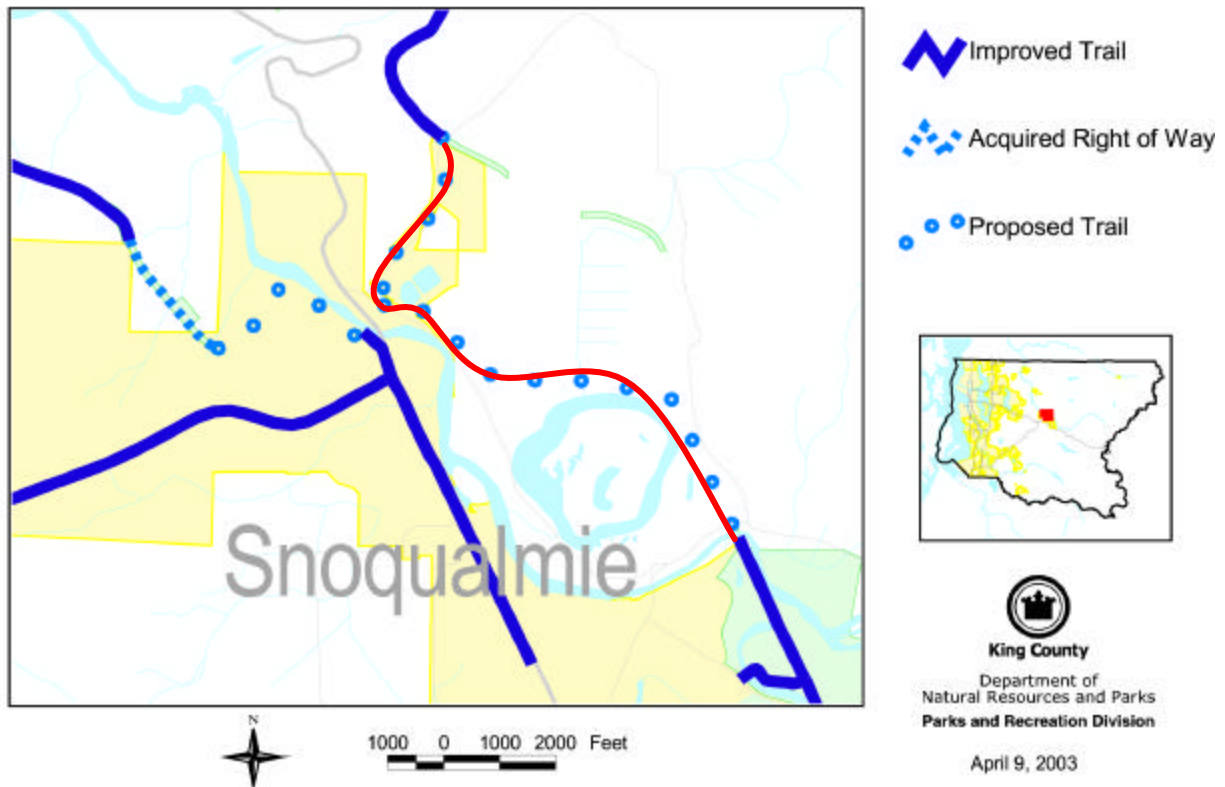
They then indicated that they would dedicate the r/w for trail purposes to extend the trail to Snoqualmie's Centennial trail. They would not, however, participate in the reconstruction. Puget Sound Energy indicated additionally that they would work with us in negotiating with Puget Sound Railroad Historic Association in an effort to modify their operations. It is critical to the safe extension of the trail that the PSRHA revise their route out to the Falls and beyond, as there is not room for the trail and rails until we get to a point just south of the falls. Our proposal to the PSRHA was to open the old station at the Falls which PSE uses for storage and allow passengers to move on and off the trains at the falls which they are not allowed to do now.)

In an effort to get agreement from all parties involved on how best to locate a trail through the area south of the Falls, King County partnered with the Mountain to Sound Greenway to create a plan and schedule of actions that would hopefully meet the needs of each involved organization. Part of the plan was to shift the location of the rails through the rock cuts south of the Falls that would allow enough room for a trail and barrier on one side. As of this writing, that plan has neither been accepted or rejected.

Status: The PSRHA continues to not show an interest in modifying their run along the entire length of the rails to beyond the falls. We have continued to request them to do so.

Responsible Agency: Parks

Snoqualmie Mill



History: This is the gap between the end of the Snoqualmie Valley Trail at Tokul Road and the beginning of the Extension at the Meadowbrook railroad bridge on Mill Pond Road, a distance of about a mile. All the land between these two points is owned by Weyerhaeuser. Much negotiation between King County and Weyco is awaiting approval of an uncompleted, long-standing agreement with King County that Weyco wants settled before they will move to another issue.

Without going into details, this long pending agreement involved land trades and monetary compensation to make up land values, on the Snoqualmie Valley Trail. An agreement was reached but had not passed out of previous Council Committee because of concerns over Weyco's development plans in the area.

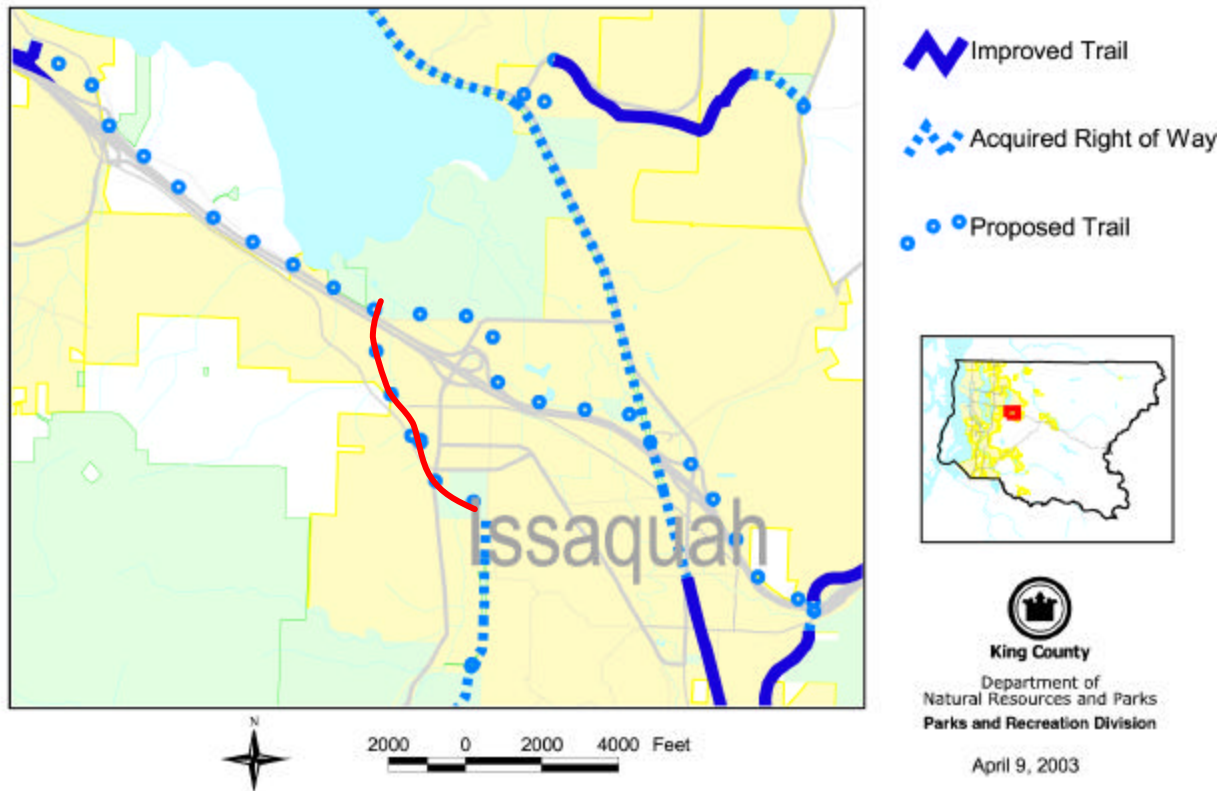
Weyco has indicated a willingness to work with us to find an acceptable trail crossing of their land once a settlement of this agreement is reached.

Status: Discussions with Weyerhaeuser is ongoing on this agreement. We need to:

1. Continue discussions with Weyco to see if they are still in agreement with the principles of the agreement and the land associated to it.
2. Arrange for Open Space or Real Estate Services to re-value the lands involved in the trade.
2. Reach agreement with Weyco on the new values and scope of the land trades.
4. Take it once again to the Council.

Responsible Agency: Parks and CPOSA

Cedar to Sammamish

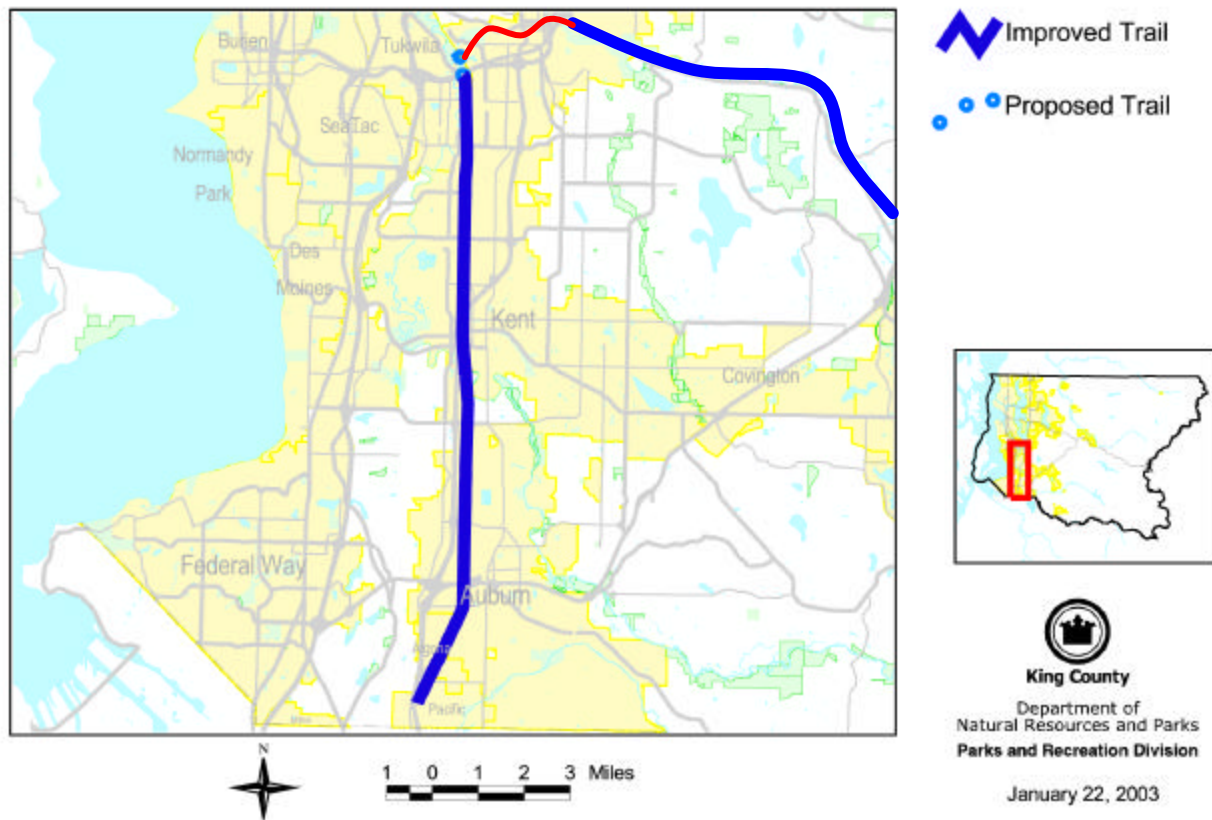


History: This connection would extend the existing trail, which at this point in time will stop at Issaquah's Community Park at 12th and Newport Way when completed, to Lake Sammamish State Park. It was always our intent that this trail should connect to the State Park. However, the obstacles of getting through Issaquah, and across I-90 somehow, were not resolved under the Open Space project.

Status: There are very limited opportunities to cross either over or under I-90. There does appear to be an opportunity to get under I-90 by utilizing the clearance provided for Tibbetts Creek to cross under the highway and onto the Greenwood property. Additional fieldwork needs to be undertaken to solidify feasible options, if any.

Responsible Agency: Parks

Two Rivers

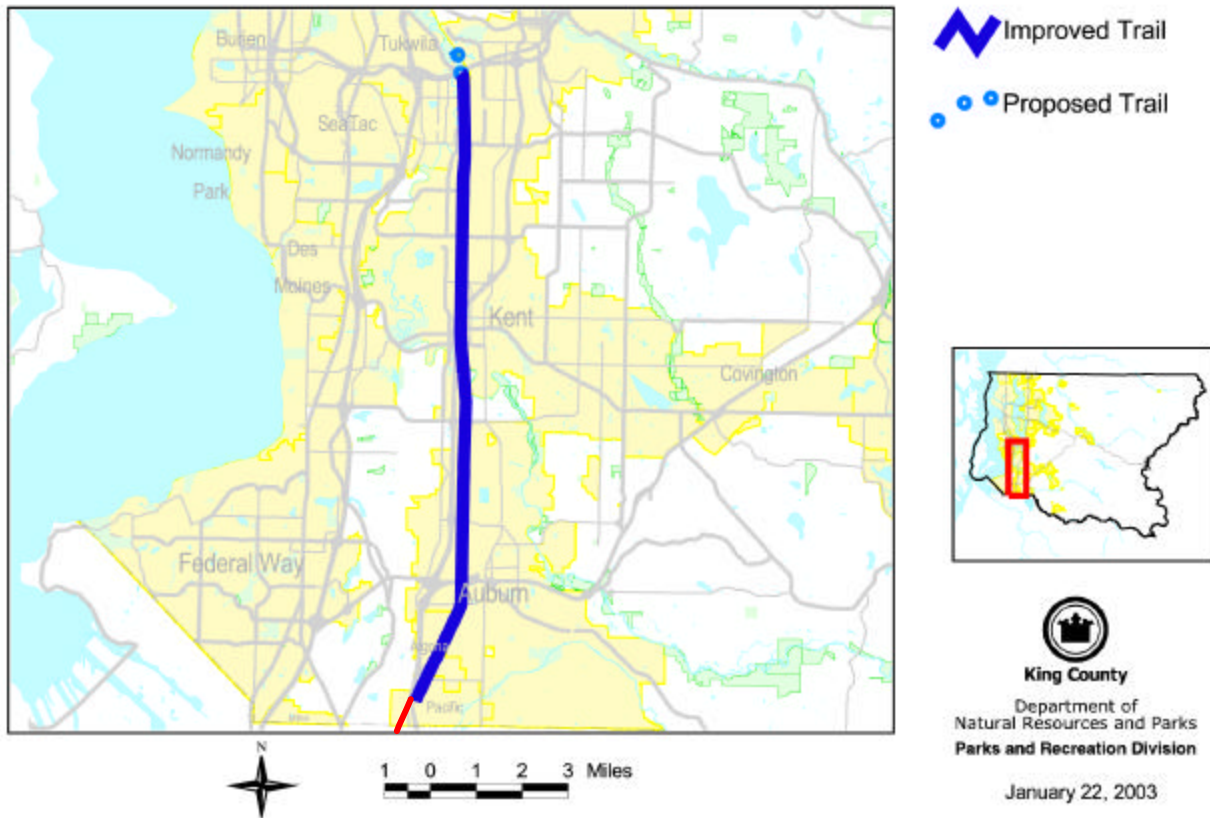


History: There have been proposals to tie the Green and Cedar River valleys together via trail since 1971 and the Urban Trails Plan. Such plans have generated many meetings between Renton and County staffs with all agreeing to the concept but specific route recommendations being few and ever moving. Everyone continues to agree that it will leave the Green River and start eastward along the Black River in Fort Dent Park perhaps continuing through the Black River Forest and then onto Renton city streets. Which streets present the best route has continued to be the moving target.

Status: Recent discussions with Renton Parks indicate that they are still thinking about how to make this connection as well. They had specific recommendations for some areas and some areas that are unsettled. Specific recommendations for a route need to be completed and agreed to by the participating agencies.

Responsible Agencies: Renton Parks, Renton Public Works, Tukwila Parks, King County Parks

Interurban Extension



History: In the early seventies to the mid-eighties as the various phases of this trail were being developed, our planning always stopped in the town of Pacific because there were no plans by Pierce County to develop a trail further. Pierce County and the city of Milton have since developed plans to utilize this r/w in Pierce County as a trail. They have begun acquisition of land and public access rights to make this happen. The first edition of the Regional Trails Plan also indicated the extension to Pierce County. The extension is part of the existing agreement we have with Puget Power, which has expired and is being renegotiated as of this writing. Trail activists and some city officials in both Milton and Pacific have been advocating this extension for some time.

Status: Little action has taken place on the part of King County. However, the cities of Pacific and Milton continue to be active in seeking such an extension. The crossing of SR 161 continues to be the major hurdle in continuing the trail. Any future connection should involve WSDOT to find the best location and means of crossing.

Responsible Agency: King County Parks, Pacific, Milton, Pierce County Parks

CHAPTER III

Trail Development

There are many issues and factors to be taken into consideration in the development of multi-purpose trails that comprise the regional trails of King County. How wide to make them, what gradient, what surfaces are appropriate, what kind of support and ancillary facilities should be provided? These and many more questions will be addressed in this chapter. This Plan is not, however, to be a design manual. This chapter will detail our experience with development guidelines and management of trails and how they work or don't work and our recommendations for appropriate guidelines. Fortunately, there are many sources of guidelines and standards that are used and incorporated into our own guidelines and will be referenced in this chapter as well.

Sources of Existing Trail Guidelines

Through the years of trail improvements many agencies have developed guidelines for the development of trail, or bicycle facilities. Many local agencies, most state Department of Transportation, and some federal agencies, have such guidelines. The particular set of guidelines that is most recognized within the transportation industry is that established by the American Association of State Highway and Transportation Officials (AASHTO). These guidelines have a long-standing body of research and experience behind them and have been periodically updated to keep abreast of changing uses, studies, and experience. The AASHTO guidelines are those King County chooses as a basis for its trail designs. There are often times circumstances that do not make it possible to adhere to such guidelines, and it is because of such problems that these are published as guidelines rather than 'standards'. There are indeed other guidelines established such as the Washington State Department of Transportation development guidelines, and the Rails to Trails sponsored *Trails for the Twenty-First Century*. These are used as back up and sources for additional information. While every effort should be made to comply with the guidelines, there are circumstances that will occur that will force deviation. In such circumstances, King County will be as close as possible to the recommended guidelines.

Because the AASHTO guidelines are so universally accepted, we do accept a liability risk whenever we do not follow them and an accident should occur. The increased liability is assumed if failure to follow accepted guidelines can be shown to be a contributing factor in the accident. Such issues can arise when design of trails through difficult geographic landscapes, i.e., areas of steep slopes, constrained landforms, etc., or as permit conditions that requires the county to alter the design to something less than the guidelines suggest. Because the county makes the decision whether to go ahead despite the limiting conditions, we assume the liability and not the permitting agencies.

Shared Use Trail Policy

When King County began operating its first paved, shared-use trail in the mid '70's, no one had any extended experience with managing such facilities. The guidelines for the time recommended only an 8' wide surface. It was felt that this was sufficient since it easily allowed two bicyclists to pass approaching each other with shy distance between. And it was sufficient, if only those two bicyclists were on the trail. When you added many more bicycles going at varying speeds and then walkers and runners who were even slower, that 8' width was found to be inadequate to allow easy passage for anyone along a busy trail.

King County thought it was ahead of the curve by building its first shared use trails 10' wide. This was indeed generally suitable for some time. It became the minimum recommended width in the 2nd edition of the AASHTO guidelines in 1991. However, King County was already experiencing complaints of user conflict and overcrowding by 1985. King County staff was receiving calls as early as 1982 regarding user conflicts and walkers feeling intimidated by some bicyclists. By the time of the 1985 survey of trail users, the "feeling of over crowdedness" on the trails was a frequently expressed opinion that also showed up in the survey. The 1985 survey was the first time the trails had been confirmed to have over 2000 users per day on a peak day with just under half that on a week day. Given the timing of the "crowding complaints" and the survey comments that the trail is becoming too crowded, it appears that the user number threshold for some people to experience overcrowding on a 10' wide trail is about 2000 users per day.

In the 1990 survey, the Burke/Gilman and Sammamish River Trails were reaching close to 3000 users on a peak day and over 1500 on a weekday. In 1991, AASHTO revised their guidelines for the development of bicycle facilities including shared use trails. They recommended a 12 foot wide paved surface with a minimum 3 foot shoulders for the multi-use or shared use trails. This new guideline reflected a growing concern for the mixing of the various non-motorized modes of use in a single facility. The shoulders were being added to allow slower users an option to walking on the paved surface. The wider width and shoulder recommendations are an effort to give more room for passage for all users and attempt to lessen conflicts.

Since then, a number of communities and advocate groups have called for even wider paving, 14 feet, or separating uses by separating facilities. This is a natural extension of the guidelines when higher and higher numbers of users utilize shared use trails. In the 1995 trail user counts; King County saw its first peak day user count go over 4000 in some areas. Also in the trail user survey that year, a question was asked as to which trail improvements users would like to see. The top two selected improvements were, 1) a separate pedestrian path with over 55%, and 2) wider width 46%.

King County currently believes that with trails that generate over 2000 users per day, that consideration should be given to attempting to separate modes of use to the greatest extent possible to promote safety and the positive trail experience people are looking for when they choose to use such facilities. To that end, when trails that have shown they generate such volumes, or estimated to do so, King County will recommend a paved surface at least as wide as recommended in the current AASHTO Guidelines for shared use trails and a separated

pedestrian facility to the greatest extent possible along the length of the trail.

Such a solution to resolving user conflicts is found in *Trails for the Twenty-First Century*, a planning, design, and management manual for multi-use trails developed for the Rails-to-Trails conservancy. The 3rd chapter on design indicates “it may be advisable to provide separate, parallel facilities for bicyclists and other users” under certain conditions, and that “two treads can separate faster users requiring hard surfaces (such as bicyclists and in-line skaters) from walkers, runners, and equestrians, who prefer softer surfaces”. They indicate the separate tread for slower users should be at least 5 feet wide.

In summary, King County currently recommends that multi-purpose trails whose use, or projected use, would be less than 2000 users per day on a peak day should be at least 10 feet of hard surface with minimum 2 foot shoulders on each side of crushed rock or other approved surface. For those trails whose anticipated peak usage is over 2000 users per day, the trail width should be at least 12 feet of hard surface with the approved 2 foot wide shoulders on either side. In addition, the establishment of a separated parallel path for pedestrians, and equestrians if such use is permitted in the corridor, should be explored wherever possible. Typical cross sections showing these can be found in Appendix 1.

Trail Surfaces

Unlike the surface for a woodlands trail, the surfacing for a multi-purpose trail has to meet a wide variety of needs. It must accommodate all the anticipated users without being detrimental to any one of them. There is not, however, one miracle surface that is best for all non-motorized uses. Walkers and joggers generally prefer a surface with some give and resilience while most wheeled uses require a harder, firmer surface. The design of multi-purpose trails has advanced from the single surface that was provided 20 to 30 years ago to one that provides a harder surface combined with a more resilient one for shoulders to that surface or as a separate parallel pathway.

When choosing a surface for the regional trail system, not only does consideration have to be given to providing a suitable surface, but suitable at what price since government agencies must be cognizant of cost and budget implications of the materials chosen. The maintainability of the material is also an important consideration. The surface chosen, no matter what the use, must be durable and easy to maintain. With these thoughts in mind, the following is a look at some of the choices facing us.

Hard surfaces

Concrete: Concrete is probably one of the most durable of surfaces available for trails. When properly installed, it has the potential to significantly outlast any other material currently available. Very little is required to maintain its surface over the years leading to low cost of maintenance.

So why isn't it used more often for trails? Its initial installation cost is higher than most other options. Improper installation and curing can lead to cracking and fractures not

easily repaired and potentially posing a safety concern for some trail users. The need for expansion joints also poses a problem for some of the smaller wheeled users such as roller skates and roller blades.

Asphalt: This is the most common surface used in the development of multi-purpose trails. It has a long lasting surface. It is a relatively easy installation and can be laid down in a continuous run without expansion joints. It is easier to make cuts, alterations, and repairs to than most other “hard” surfaces.

While asphalt is a fairly durable surface, it does slowly degrade over time. Without a surface sealant, asphalt may develop a pattern of cracks and checking called “alligatoring”. The lifetime of an asphalt surface may be from 15 to 20 years. The material, being petroleum based, has some oil leachate potential which is making it less attractive for use along or near waterways.

Crushed Rock: Compacted crushed rock has proven to be an adequate surface for many trail users. A 5/8 minus or smaller rock with a proper amount of ‘fines’, silt and clay sized particles, to bind the rock provides a suitable surface for most bicycles, equestrian and pedestrian users. It is inexpensive compared to other alternatives.

The crushed rock surface requires more frequent maintenance than other options. The fines leach out over a period of several years, which requires more crushed rock. Vegetation more easily creeps in from the edges than other surfaces meaning that in order to maintain the edge, more effort needs to be expended to do that, either by mechanical means or chemical. In addition, the surface is not likely to meet accessibility standards over a year or two after initial good installation (see the ADA discussion).

Soil Binders: Some of these materials are soil stabilizers and others are ‘resin emulsions’. The soil binders utilize materials that are mixed into an earthen surface material and claim the ability, depending on the application, to be moisture permeable while providing a resilient, natural appearing surface.

Limestone: Limestone is one of the more popular materials used for multi-purpose trails in the Midwest. It compacts quite well to a surface that would be considered accessible. Its greater availability in other parts of the country make it a more viable option there than in the northwest.

Limestone is an erodable surface and will leach out over time. It is also subject to runoff erosion and needs to be tended to. Equestrian use is discouraged on this type of trail because the cupping action of the hooves creates “holes” in the surface of the trail. This is a material that may be looked at as an alternative to crushed rock used on the shoulders of King County’s regional trails.

The following table lays out a brief synopsis of the more popular alternatives used for trail surfacing:

TRAIL SURFACE SYNOPSIS			
SURFACE MATERIAL	DESCRIPTION OF MATERIAL	ADVANTAGES	DISADVANTAGES
Soil Cement	Mixture of pulverized native soil and measured amounts of Portland cement spread about 4" thick on prepared subgrade, then rolled and compacted.	Uses natural materials, more durable than native soils, smoother surface, inexpensive to install, and will support most user groups.	Surface wears unevenly, not a stable all-weather surface, erodes, difficult to achieve correct mix. Surface can crack into large chunks with temp. changes or heavy use
Granular Stone	Aggregates and fines can be compacted into a firm surface. For an ideal surface utilize 3/8" minus stone (for accessibility), and spread into a layer at least 4" thick over prepared sub-grade and compact	Soft but firm surface, natural material, moderate cost, smooth surface, accommodates multiple use. Maintenance is minimal, but stones should be replenished and surface regraded 7-10 years with continual spot repairs/grading	Surface can rut or erode with heavy rainfall, regular maintenance to keep consistent surface, replenishing stones may be a long-term expense, not for steep slopes. Surface will retain moisture and vegetation may sprout.
Asphaltic Concrete (AC) or "black top"	Asphalt is actually a cement composed of tar and oils. AC surface is composed of a graded aggregate stone mixed with asphalt. AC should be installed 2 inches thick with an asphalt machine and rollers	Hard surface, supports most types of use, all weather, does not erode, accommodates multiple use. AC is flexible pavement that conforms to contours of sub-base and subgrade.	High installation cost, costly to repair, not a natural surface, freeze/thaw can crack surface, flooding can ruin, construction vehicles need access. AC surface is hard on horses' hooves, leave imprints in hot weather
Resin Modified Emulsion ROAD OYL ®	High bonding strength emulsion developed from natural tree resins for use in pavement applications. Environmentally friendly binder that can be cold-applied in the construction of pavements like AC.	May be installed as hard or soft trail surface for multiple use. Highly adaptable to any desired finish surface, water & weather resistant. HC accessible, over 4 times stronger than AC. Retains soil coloration for aesthetics, flexible.	Comparable to AC install cost based on availability of road base and AC plant location. Need to carefully follow ROAD OYL mix design guidelines to ensure desired qualities, must allow to air dry after compaction.
Concrete	Most expensive surface because of installation requirements. Typically a wire or fabric mesh and forms are constructed over a well-prepared subbase, and 4 to 6 inches concrete is placed on top	Hardest surface, easy to form to most site conditions, supports multiple use, lowest maintenance, resists freeze/thaw, best cold weather surface, resistant to flooding and heavy use, colored and scored w/grooves.	High installation cost, costly to repair, not a natural looking surface, construction vehicles will access to trail corridor. Unless rough finished surface may be slippery when wet, joints may be bumpy and hazardous.
Native Soil	Natural surfaces include existing soil, vegetation, rocks, tree roots, other obstructions from subgrade	Natural material, lowest cost, low maintenance, can be altered for future improvements, easiest for volunteers.	Dusty, ruts when wet, not an all-weather surface, can be uneven and bumpy, limited use, not HC accessible
Concentrated Liquid Soil Stabilizers EMC®/EMS ®	Soil stabilizers for earthen materials that comprise trail surfaces are diluted & mixed into scarified and graded soils with water, compacted for hard surface	Hard, natural appealing surface that is moisture sealing, maintains trail stability through periods of extended precipitation/frost heave. Most economical hard surface.	Must utilize equipment to rototill or scarify down about 6 inches depth in earthen surface before applying water and soil stabilizer mixture for optimum effectiveness.
Wood Chips	Minimum thickness at time of installation should be no less than 3 inches, need to replace every 2 years	Soft, spongy surface-good for walking and equestrian use, moderate cost, natural material, attractive, blends in.	Decomposes under high temperature and moisture, requires constant replenishment, not typically accessible

Ancillary Trail Facilities

There are many facilities along any trail that are needed for safe use of the trail, or trail user convenience, or to improve the trail experience. Some of these are prescribed in the 'trail guidelines' literature described earlier and will only be touched on in the descriptions following. Not all such adjunct features will be described, e.g., benches or tables, while others that may also appear in the guidelines will be discussed as they have continued to be points of discussion during trail planning efforts. Again, this is not to serve as an exhaustive treatise on these, but will serve to point out certain issues that have arisen with these and to make recommendations from King County's experience.

Access Control Measures: It is desirable to keep motorized vehicles off the trail system for the safety of the trail users. There are a variety of devices used to accomplish this function, and some seem more appropriate to certain situations than others. The following serves to describe the major types of such devices.

Bollards: Bollards are essentially imbedded posts across the travel lanes of the trail. A minimal discussion of bollards can be found in the AASHTO Guidelines (1999 edition). Bollards are used in all of our fully developed, more urban trails. It should be remembered that any impediment located in the trail is a potential safety hazard and every effort should be made to minimize the number of times bollards are used as well as the number used at each location. In addition, they should be colored for easy visibility and have applied to each reflectorized paint or tape. Bollards should not be located any closer than 5 feet on center to allow easy flow of traffic around it. The first bollard should be located in the middle of the trail, which helps to define and separate the flow of traffic. If more than one bollard is used, the next ones should be off the edge of the trail on each side. The central bollard should either be removable, lay-down, or a spring-loaded type. King County has used a number of different types of bollards and has found the following guidelines should be observed for new or replacement bollards:

- Should be of a weight easily handled by a single worker.
- If a removable type, the sleeve should resist debris accumulation.
- If removable, the sleeve should not protrude above the surface of the trail.
- The locking mechanism should be easily accessible and when the bollard is removed, should be flat or out of the way.

An important step in making a trail safe is to allow for the access of emergency vehicles. No matter how easy it is to use, a great number of removable bollards in a length of trail presents an impediment to quick access in cases of emergency. Where there are more than a few bollards in any section of trail, it may be desirable to use breakaway, knock-down, or spring-loaded bollards. King County has just begun a long-term trial of the spring-loaded bollard types on the Burke/Gilman Trail.

Gates: In less than fully developed trails, usually in more rural sections of the county, where bollards have not been effective, gates have been used. Gates on trails that are open for use should not completely block the travel way for trail users. Yet they need to be wide enough to allow maintenance vehicles and equipment through. This may mean, in some situations, that they should be located off-center. King County has standardized such a gate and has been used with some success for a great number of years. The only concern of late is that they may not allow passage of mobility assist equipment. This may be alleviated with the off-center approach to location.

Maze Gates: This is not referring to the pedestrian maze gates that are found within a fence line, but the short, offset pair of gates that force trail users around the ends of each. These are effective in slowing people down because they are forced to maneuver around the ends and get in each other's way. Each gate narrows the trail down to effectively to four feet or less. That's room for one-way traffic around the end of each gate. While used by some agencies, they are not found in any of the accepted guideline manuals for trail facilities.

They narrow the trail well below minimum recommended guidelines and they do not allow minimum widths called for to provide handicap access. They create additional problems for emergency vehicles that have to open four gates per intersection to two gates or bollards otherwise. They may carry liability or funding concerns. These cannot be recommended on King County trails.

Other Barriers: There are other types of barriers that can be found on different types of trails, such as the motorcycle barrier used on some equestrian trails, or the highway barrier. These have limited applicability here and are not conducive to accessibility guidelines and will not be discussed here.

Street and Driveway Crossings: Street and driveway crossings are covered in both the *AASHTO guide to the development of bicycle facilities* and in the *Manual on Uniform Traffic Control Devices*. The one item that should be stressed here is that in planning for such crossings under the guidance of those manuals, is that the regional trails should be considered as a transportation facility. It is not a lesser facility to any street, and should be considered as a street, or any other transportation corridor, in determining right of way at such crossings.

Trail Heads: If any trail is going to be effectively used, there has to be access along it. A trailhead is most often found at the terminus of a trail, but where should they be located otherwise? A 'trailhead' generally consists of more than just a place where the trail can be accessed. A trailhead does provide access, but also a certain level of facilities, such as a restroom, possibly water and a place to rest. In a more urban setting, ideally, we would like the trail user to be ½ hour to no more than an hour away from a trailhead facility while on the trail. Given a walking pace of about 2-3+ miles per hour, that leaves the spacing for location of facilities from 2 to 6 miles apart. In more rural settings, the expectation, and the opportunity, to provide such facilities are not as great. The spacing may range up to 6 to 8 miles apart. When the opportunities are indeed greater, they should be taken advantage.

Bridges and Guardrails: These are also facilities that are discussed in the design manuals. It is felt important to reinforce here what the guidelines have to say, especially in light that King County has yet to meet those guidelines in any of its trail bridges. The deficiency lies in the width of the bridge. The guidelines call for the width of the bridge to be the width of the trail plus the width of the "clear zone", or shoulder, coming up to it. To provide only the width of the trail effectively narrows the trail across the confined space of the bridge because of the "shy distance", or the distance users move away from the side obstruction of the side rails. We have a better chance in the future to carry the traffic on our trails as effectively across our trail bridges as the trail itself if we can more closely meet the recommended guidelines for such facilities.

Trail Maintenance

After a trail is completed, and after following all the guidelines for safe development of such facilities, and choosing the best ancillary improvements and their location along the trail, the process that will keep the trail safe, serviceable and enjoyable for the users for the next 20 to 30 years is the maintenance. Everything in this world is in the process of being worn down, from

this writer to the grandest mountain to our newest trail, and to keep the trails from wearing down too quickly, to keep the continually encroaching vegetation at bay, and to keep drainage facilities in working order, regular maintenance is required for the surface and materials that make up the trail. To keep the trail safe for public use the surface has to be periodically cleaned, both vertical and horizontal clearances have to be maintained, and any regulatory and warning signage, markings and devices need to be kept serviceable. To keep the trails a pleasant experience, litter and garbage have to be picked-up and removed and evidence of vandalism and other repairs have to be continually made.

To accomplish all of this, a table of tasks for each trail has been developed similar to the example for the Burke-Gilman Trail shown below.

Site Maintenance Plan

Burke Gilman trail														
ANNUAL REQUIREMENT														
TASK DESCRIPTION		Non Grow		Grow Season										Total Hours
		J	F	M	A	M	J	J	A	S	O	N	D	
Total Hours		139	122	142	204	234	238	121	207	170	146	72	43	1,836.20
PSII		138	121	133	202	232	237	116	206	168	140	71	43	1,805.20
504	Mowing, Trimming, edging			16	64	82	60	40	62	32	21.5			377.50
557	Landscape Maintenance	16.7	2	2.5	3			4	7.7	6.5	16.7		9	68.10
570	Site Meetings									12.5		26	7.2	45.70
501	Chemical Application	17	18	3	14.5	14.5	12.5	15.5	19	13.5	7	12.7	7.7	154.90
539	Litter/Garbage	53	15	27	26	32	33	30	25	25	16	14	10	306.00
540	Invasive Plant Removal													
560	Brushing	4	58	4		54.5		17.5	55	56	48	1		298.00
575	Semi-Skilled Crafts Maintenance	46	28	60	57	48	130	6	28					403.00
580	Drainage Maintenance	1		2							10	5		18.00
594	Park Inspection				1	1	1	1	1					5.00
595	Trail Structures & Signage													
597	Natural Area Trail Maintenance									16	1	8		25.00
565	Public relations										3			3.00
532	Pavement cleaning			18.5	32			2	8	6.5	17		9	93.00
565	Public Relations													
924	Hauling (Transporting)				4							4		8.00

IV. EQUIPMENT				HrRate	
All Terrain Vehicle (ATV) "Gator"		Hours at	\$ 3.00	\$	-
Back Pack Blower	100	Hours at	\$ 2.25	\$	225
Chain Saw 14" bar		Hours at	\$ 3.00	\$	-
Chain Saw 20" bar	200	Hours at	\$ 4.00	\$	800
Weedie	20	Hours at	\$ 4.00	\$	80
Trailer (large for Grader)		Hours at	\$ 12.90	\$	-
10 Yard Ton Dump Truck		Hours at	\$ 14.45	\$	-
Pole Pruner, gas, w/extension	20	Hours at	\$ 2.55	\$	51
Push Mower	100	Hours at	\$ 4.00	\$	400
Trailer, single-axle	113	Hours at	\$ 2.00	\$	226

The challenges of providing for the maintenance called for is also exemplified in this table. The total costs associated with the tasks, equipment, materials, overhead and services charges shown or implied in the table exceed \$100,000 annually. This is for a 4 1/2-mile trail, which brings the average cost of the request to nearly \$25,000 dollars per mile per year. The reality is, however, that the actual expenditure on the Burke-Gilman was less than 60% of that number. Still making the annual cost per mile about \$15,000. While this is certainly not the level that was asked for, it does address the basic maintenance needs and keeps the trail safe and serviceable. It does mean that the frequency of some maintenance tasks isn't what would be considered ideal and that some tasks get deferred. This is true throughout the system.

The Burke-Gilman Trail is one of the more expensive trails to maintain. This is in part due to how it was developed, where, and when it was developed. It is King County's oldest regional trail meaning it simply takes more to keep it up. The laws of entropy are harder to overcome the older a facility becomes. It is expected that with the redevelopment of this trail, and older facilities in general, that maintenance costs can go down. They also may go down with better selection and location of plant materials and newer materials for ancillary facilities.

There is some level of disparity on trail maintenance costs for a variety of reasons, e.g., level of development, differences in surface material, quantity of ancillary facilities, etc. So, it is not helpful to give one average annual cost per mile. With some exceptions, the annual range of costs per mile for a developed regional trail is between \$5,000 and \$10,000.

Accessibility Compliance

The public right-of-way is an ancient concept, as old as the notion of owning land. The commerce of humankind requires circulation, and since the days of the earliest cities, the public street has served as the venue and vessel for the exchange of ideas, opinions, services and goods. For centuries, public rights-at-way ensured the right to passage of all users, humble or grand, on foot or by any other mode.

However, only within the latter half of the last century has serious thought been given to the right to access for those who, historically, had never been considered at all in the built environment. Within the public right-of-way, efforts to accommodate people with disabilities have been accomplished on a state-by-state basis with guidance from various code-writing organizations, but there has been no single national set of guidelines for accommodating people with disabilities in the public right-of-way.

Public rights-of-way that constitute trails still harbor many transportation activities, including walking and running, bicycling, and light freight movement. They house the hardware, such as signage and streetlights for crossings, etc., that supports those activities. In many cases they contain public and private utilities. With so many diverse functions to be supported, the trail within the public right-of-way is often created over a period of time by a variety of minds and hands.

For the individual user the trail must work at an intimate level. Details at the individual scale can appear seamless and coherent if they are done right. This is the challenge for King County's regional trails, that they be seamlessly developed to provide accessibility to meet the federal guidelines. But what exactly are those guidelines? The following will give some background and where King County is as of this writing.

Background: The Americans with Disabilities Act (ADA) of 1990 is a civil rights statute that prohibits discrimination against people who have disabilities. Under the ADA, designing and constructing facilities for public use that are not usable by people who have disabilities constitutes discrimination.

The ADA covers a wide range of disability, from physical conditions affecting mobility, stamina, sight, hearing, and speech to conditions such as emotional illness and learning disorders. Such disabilities may or may not be evident to others. The percentage of the US population affected by a condition that constitutes a disability under the ADA is expected to increase over the coming decades, in part due to the growing numbers of the elderly.

The ADA addresses access to the workplace (title I), state and local government services (title II), and places of public accommodation and commercial facilities (title III). It also requires telephone companies to provide telecommunications relay services for people who have hearing or speech impairments (title IV) and miscellaneous instructions to Federal agencies that enforce the law (title V).

Public rights-of-way are covered by the ADA under title II, subpart A. The Department of Justice (DOJ) has rulemaking authority and enforcement responsibility for title II, while the Department of Transportation (DOT) has been designated to implement compliance procedures relating to transportation, including those for highways, streets and traffic management. The Federal Highway Administration (FHWA) Office of Civil Rights oversees the DOT mandate in these areas.

The Access Board is an independent Federal agency responsible for developing accessibility guidelines under the ADA to ensure that new construction and alterations covered by titles II and III of the ADA are readily accessible to and usable by individuals with disabilities. The Access Board initially issued the Americans with Disabilities Act Accessibility Guidelines (ADMG) in 1991 (36 *CFR* 1191, *Appendix A*). ADMG consists of general sections (ADMG 1 to 4) that apply to all types of buildings and facilities, and special sections (ADMG 5 to 12, and 15) that contain additional requirements for certain types of buildings and facilities. However, the Access Board has not yet adopted an accessibility rule regarding trails.

Trail Accessibility: It is a common misconception that there is an adopted rule regarding trail development applying to outdoor recreation areas. There is not, as of the time of this plan. A final report was prepared by the Regulatory Negotiation Committee on Accessibility for Outdoor Developed Areas (RNC) in September of 1999. The Access Board began the process of setting a rule for outdoor recreation areas, including trails, in 1994. Because of the diversity of opinions about access between and from agencies, the public, and user groups, the RNC was established with the goal to arrive at a consensus decision on the text of the proposed rule. A final report by the RNC was issued on September 30, 1999, but, as of yet, there is no proposed rule for trail accessibility, and given the timing for development of new rules, it is unlikely that a rule will be in place before 2005. While a rule may not be in place, we can take much guidance from the final report, which we can infer will be the direction of the Board when and if a rule is adopted.

The report, and thus the probable rule, only applies to trails being designed, developed or altered. That is, in the design of a trail proposed for pedestrian or multi-purpose use, we should provide for accessibility as called for in the report; and the development of such a trail should provide such accessibility; or, if we altered an existing trail intended for pedestrian or multi-purpose use, we have to provide for accessibility. There is no requirement or expectation that acquired and unimproved trails and trail rights-of-way need to be accessible. The same applies to existing trails, which aren't required to meet the accessibility guidelines until such time as we redevelop or alter that trail. Maintenance of existing trails does not trigger the accessibility rule nor does it constitute an alteration.

However, King County also has a 'Compliance Office' that works with management agencies to assure provision of accessibility in existing and planned facilities. King County Parks and Recreation Division and the Compliance Office will also work to assure that no unnecessary artificial barriers to access are installed on our existing trail facilities that would inhibit those who are ambulatorily challenged to also utilize these trails if they so desired.

Motorized Assist Vehicles: King County's policy is now and has always been that no motorized vehicles are allowed on trails. Originally, this referred to cars, trucks, and motorcycles. But motors have been attached to a much wider variety of vehicles since the county's first trails in the early 70's. There have been both electric and gas motors attached bicycles and scooters as well as specialized vehicles such as the moped and Seguey, and there may very well be new ones in the future. The widespread use of such devices does not meet the vision and goals that established such "non-motorized" trails.

There are also new motorized assist vehicles besides just motorized wheel chairs. There are a variety of 3 and 4-wheeled motorized devices that aid the mobility challenged population in moving around. It is intended that these should all be accommodated on the trail system. However, the current code does not provide for these vehicles, nor does it adequately restrict other types of vehicles. Section 7.12.295 E of the King County Code currently reads:

“No motorized vehicles shall be allowed on King County Trails. For the purposes of this section, “motorized vehicles,” means any form of transportation powered by an internal combustion or electric motor. This includes but is not limited to, automobiles, golf carts, mopeds, motor scooters, and motorcycles. This section shall not apply to wheelchairs powered by electric motors, or authorized maintenance, police or emergency vehicles.”

We would recommend, after concurrence by the Office of Compliance, that minor changes be made as follows:

“...not limited to automobiles, golf carts, and all two wheeled motorized devices including mopeds, motor scooters, and Segueweys...”

and

“...shall not apply to wheelchairs and other recognized mobility assist vehicles powered by electric motors...”

A chart with pictures has been prepared that shows several configurations of such mobility assist vehicles and will help staff recognize such vehicles on the trail. The chart should continue to be checked with the compliance office periodically for any updates or changes.

CHAPTER IV

King County Trails

The following pages show the overall system, and the individual trails, with a brief synopsis of the status of each trail, if there are any plans to make minimal improvements to open any trail segment in the near term prior to its formal development, the planned cross section look and uses of the trail when fully developed, and a map showing its location and route.

Regional Trails

in King County

- Improved Trail (King County Parks)
- Acquired Right of Way (KCP)
- Proposed Trail (KCP)
- Improved Trail (Other Agency)
- Acquired Right of Way (Other)
- Proposed Trail (Other)

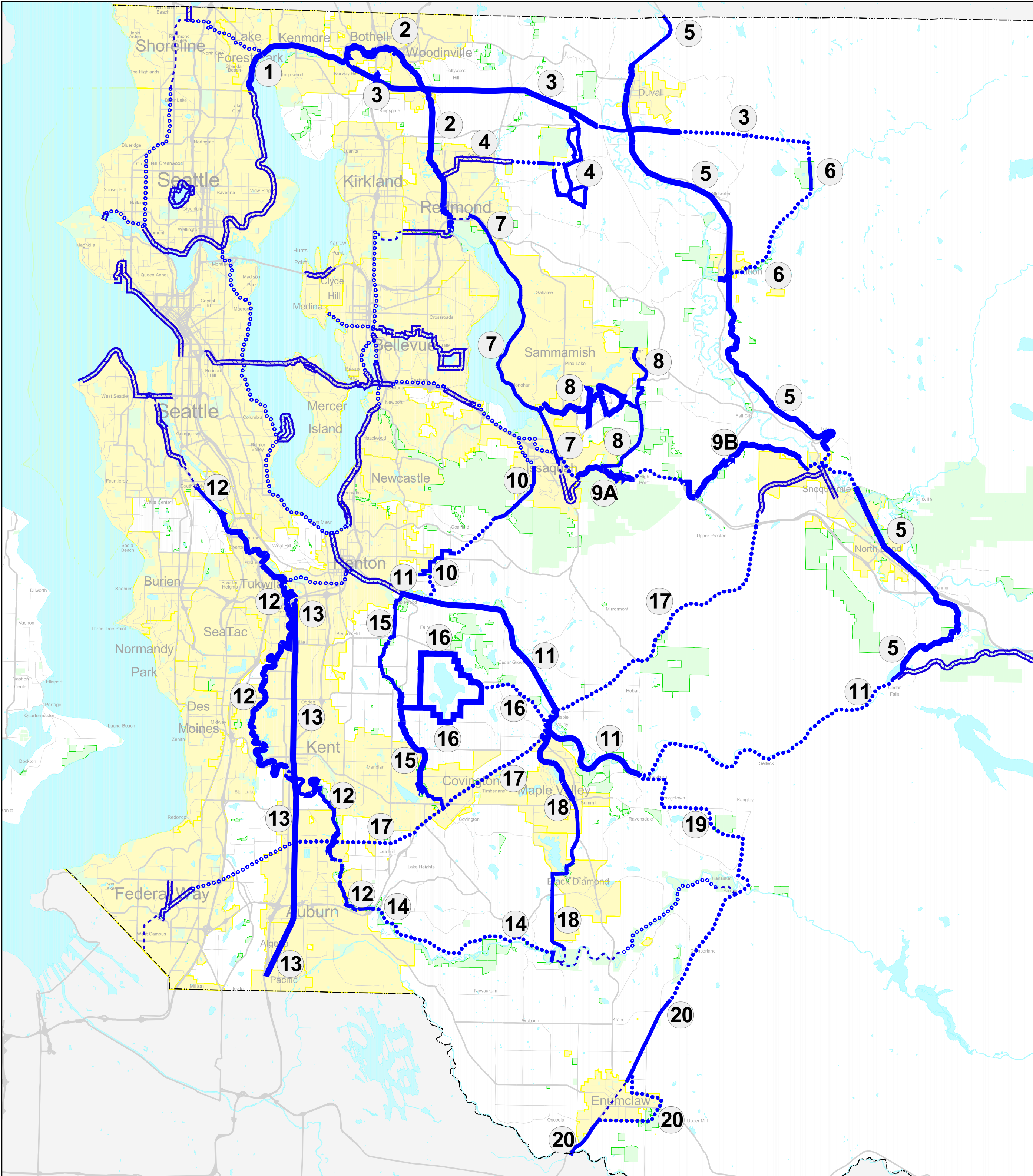
- King County Park System
- Other Parks
- Cities



King County
Department of
Natural Resources and Parks
Parks and Recreation Division
January 22, 2003



1 0 1 2 3 4 Miles



Burke-Gilman Trail

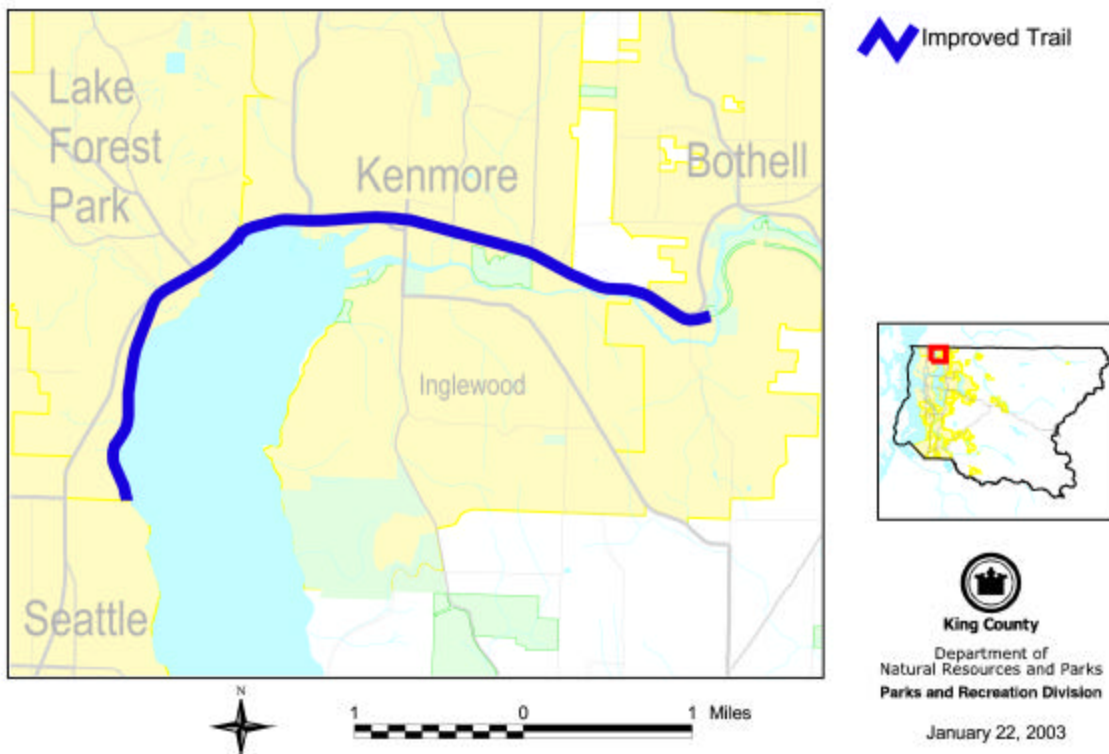
Location: The trail follows the abandoned railroad R/W along the west and north shores of Lake Washington from NE 145th Street to its intersection with the Sammamish River at approximately NE 170th Street in Bothell.

Current Ownership: The entire length is owned by King County.

Current Conditions: The R/W between NE 145th Street and 61st Ave NE, a distance of 2.3 miles, is developed with a 10' wide paved trail. The eastern 2.4 miles from 61st Ave NE to the Sammamish River near Blyth Park is a 12' wide paved surface with shoulders.

Proposed Short-Term Development and Uses: Continue to improve the design and location of signage, bollards and other appurtenances to the trail to improve safety and ease of use for trail users.

Proposed Long-Term Development and Uses: Redevelop the 2.3 mile western 10' wide section to a 12' wide paved surface with shoulders. If possible, develop a parallel soft surface trail to better separate modes of use.



Sammamish River Trail

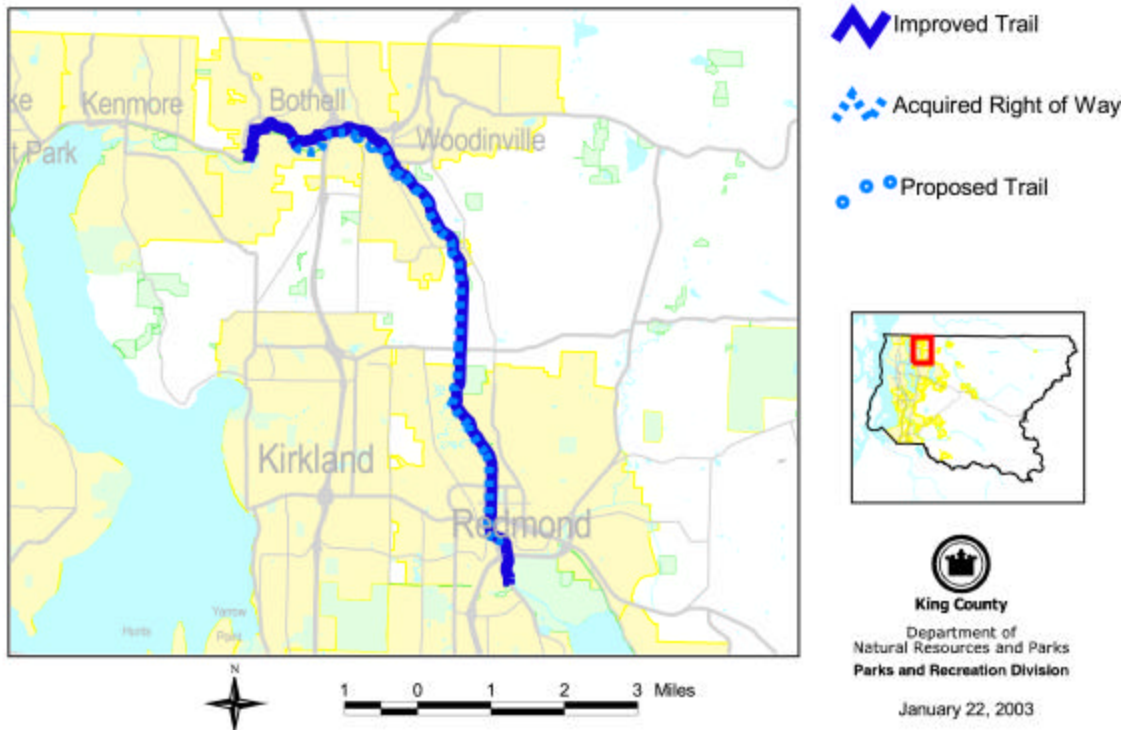
Location: The trail follows the bank of the Sammamish River from 96th Avenue NE in Bothell to Marymoor Park at the north end of Lake Sammamish.

Current Ownership: The trail is owned by King County with a section within the City of Bothell owned by the city.

Current Conditions: From 96th Avenue in Bothell to just north of NE 145th Street in Woodinville, the trail is a 12' paved surface. The remainder south of 145th to Marymoor Park is a 10' paved trail. An equestrian trail parallels the paved trail from Marymoor to NE 175th Street in Woodinville.

Proposed Short-Term Development and Uses: Complete multi-year effort to widen the entire length to 12 feet. Complete acquisition along left bank between Redmond and Bothell.

Proposed Long-Term Development and Uses: Long-Term development includes paving the right bank from Leary Way to Marymoor Park, which would include a bridge across Bear Creek; development of pedestrian and equestrian trails on the left bank between Marymoor Park and Bothell.



Tolt Pipeline Trail

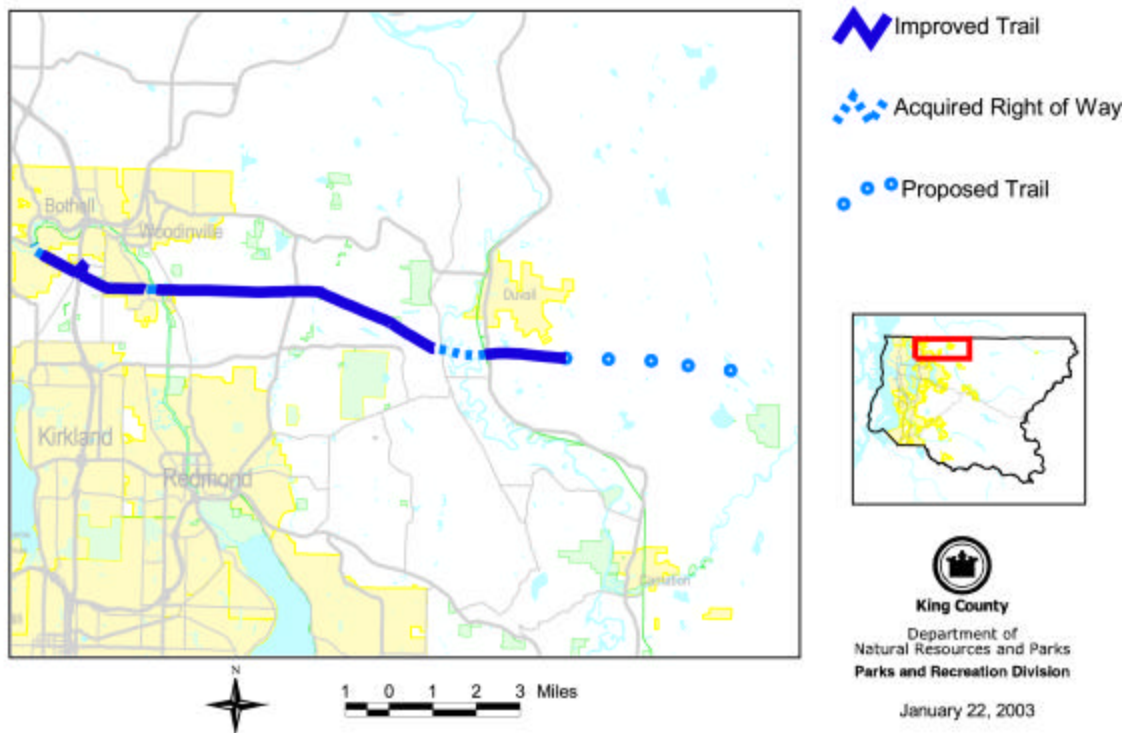
Location: This trail begins at Blyth Park in Bothell and follows the City of Seattle's Tolt Pipeline r/w east to the Tolt Diversion Lake southeast of Duvall.

Current Ownership: The land is owned by the City of Seattle with King County holding a permit for trail purposes eastward to a crossing of Big Rock Road.

Current Conditions: The r/w is generally cleared and has a service road running its entire length. All entrances to the pipeline are gated. Some gates are open for trail use.

Proposed Short-Term Development: Includes, a) maintaining the unpaved status of the trail, b) provide a second post at all entrances to lock the gates in an open position for trail users, c) switchback trail down the face of the east valley wall of the Sammamish. Uses include pedestrian, equestrian, and appropriate wheeled uses.

Proposed Long-Term Development and Uses: Includes, a) Maintain trail as described in the 'Short Term' section above, b) develop trail bridges across the Sammamish and Snoqualmie Rivers. Extend the SPU permit eastward from Big Rock Road to meet the proposed Tolt River Trail.



Puget Power (PSE) Trail

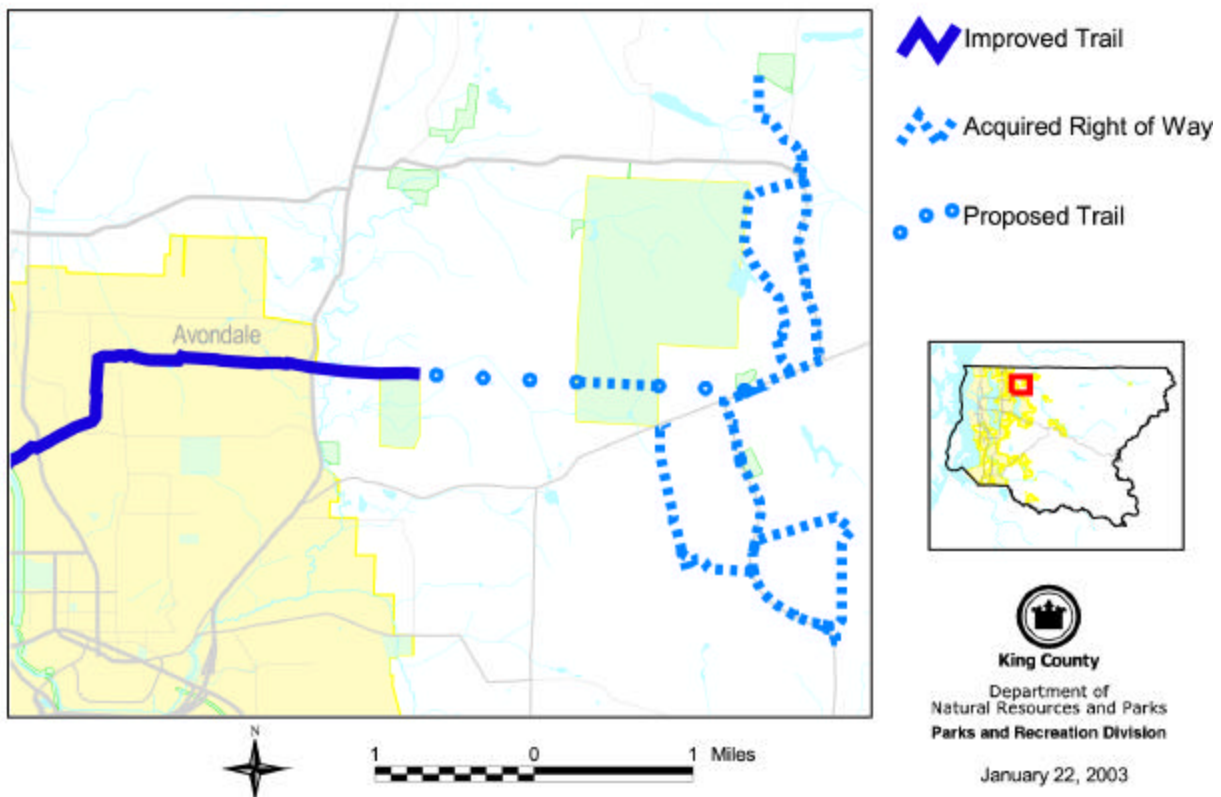
Location: This trail extends from the Sammamish River and goes eastward along a Puget Sound Energy corridor to an intersection with Novelty Hill Road. Here it connects with trails from the Redmond Ridge and Trilogy developments, which then connects to the Tolt Pipeline Trail.

Current Ownership: The corridor is owned by Puget Sound Energy. The connecting trails will be owned by King County upon completion of the developments.

Current Conditions: The route is improved as a soft surface trail from the Sammamish River to Redmond's Farrell-McWhirter Park. Some trails exist within the developments, but none are yet fully completed.

Proposed Short-Term Development and Uses: Includes extending a soft surface trail from Farrell-McWhirter Park to the urban planned developments.

Proposed Long-Term Development and Uses: In addition to the above soft surface trail, a 10 to 12 foot wide paved trail with minimum 2-foot wide shoulders will parallel the soft surface trail. Dedication of the completed trails within the developments will complete those connections.



Snoqualmie Valley Trail

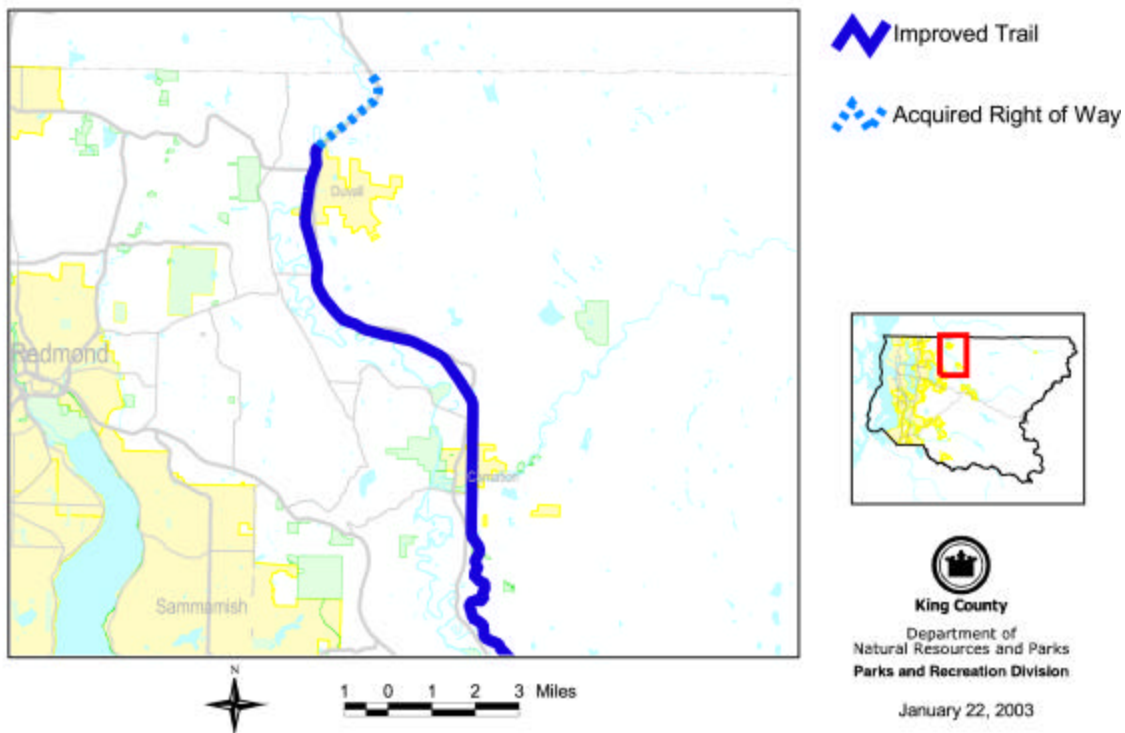
Location: The route follows an abandoned railroad r/w roughly parallel to the Snoqualmie River from the Snohomish County line to Cedar Falls south of North Bend.

Current Ownership: The r/w is owned by King County except for the section between Tokul Road and Reinig Road near Snoqualmie, which is currently owned by the Weyerhaeuser Company (Weyco).

Current Conditions: The entire length from Duvall to Cedar Falls is improved for trail use. The section north of Duvall to the county line will remain unimproved until there is a trail to connect to in Snohomish County.

Proposed Short-Term Development and Uses: Continue trail use and management as currently provided. Negotiate with Weyco on route of trail across their property. Uses include pedestrian, equestrian, and appropriate wheeled use.

Proposed Long-Term Development and Uses: Includes development of a 10' to 12' wide hard surface accessible trail with a parallel soft surface trail along the entire route. Uses are the same as Short-Term but further include appropriate mobility assist vehicles.



Tolt River Trail

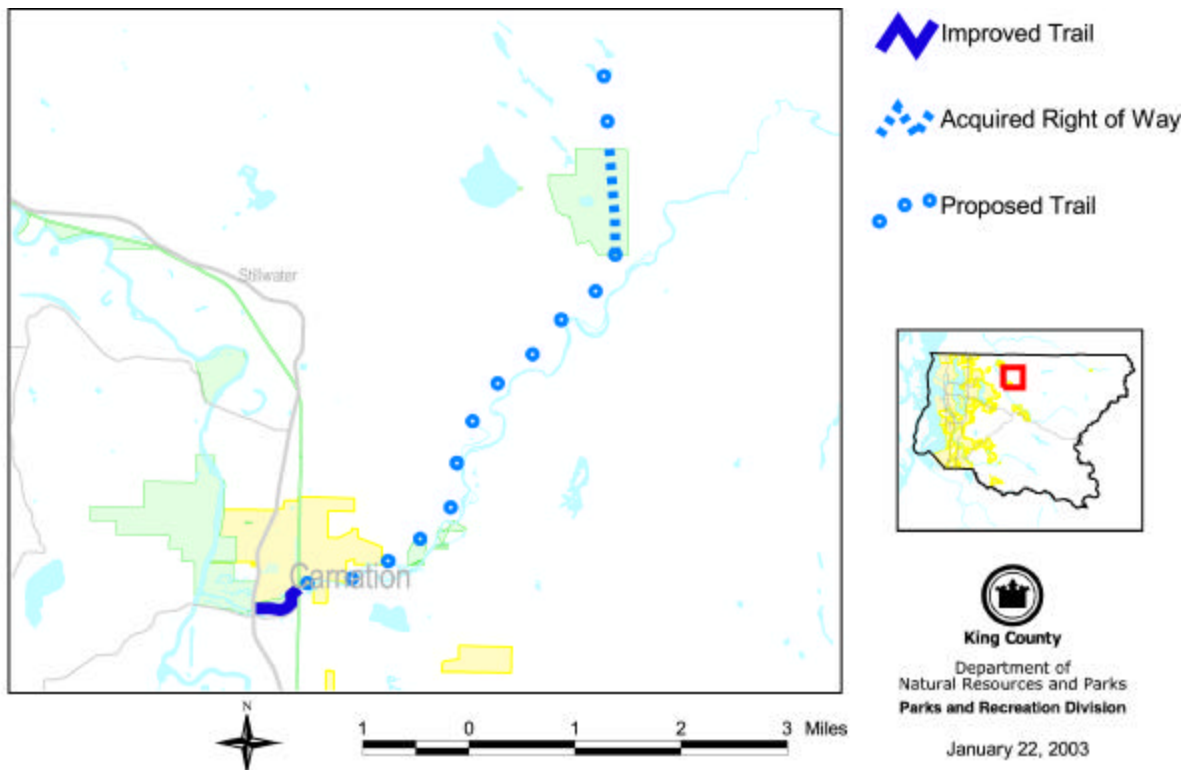
Location: The proposed trail route roughly follows the Tolt River from the Town of Carnation northwesterly to near Moss Lake natural Area, thence north through Moss Lake Natural Area to the Tolt Pipeline.

Current Ownership: Except for Moss Lake, the route is privately owned.

Current Conditions: The route is unimproved for trail purposes.

Proposed Short-Term Development and Uses: There is no short-term plan for development or use.

Proposed Long-Term Development and Uses: Long-Term development includes providing a 3' minimum soft surface tread for appropriate non-motorized uses, which may include equestrian, pedestrian, and bicycles, subject to topographical, sightline, and other safety or environmental constraints.



East Lake Sammamish Trail

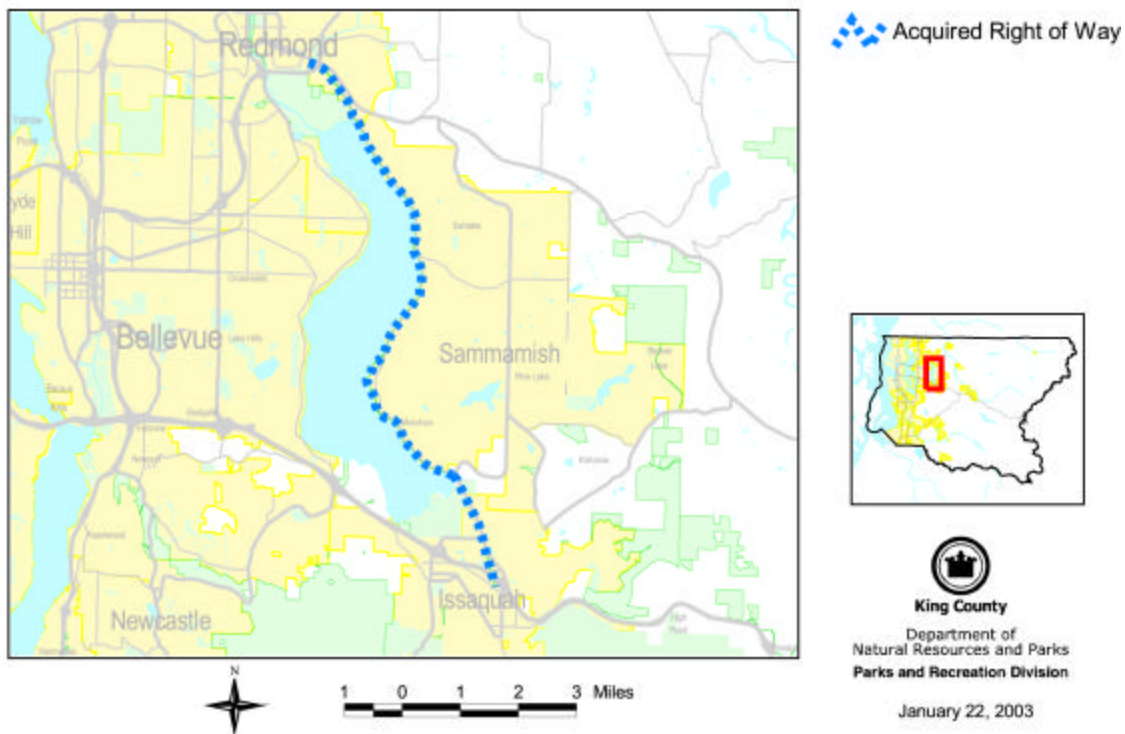
Location: The route follows an existing railroad r/w along the east shore of Lake Sammamish from Rear Creek in Redmond to Gilman Boulevard in Issaquah.

Current Ownership: The route is owned or managed by King County.

Current Conditions: The old rail grade has no improvements for trail use.

Proposed Short-Term Development and Uses: Short-term development includes improving the rail bed and adding a crushed rock surface for trail use. This will likely be done in sections with those in the cities of Redmond and Issaquah coming first.

Proposed Long-Term Development and Uses: Long-Term development includes a 12' wide paved trail with minimum 2' shoulders on each side, paralleled by a soft surface trail along a much of the route as feasible. Uses are currently anticipated to include pedestrian, non-motorized wheeled, and equestrian activities.



East Plateau Trail

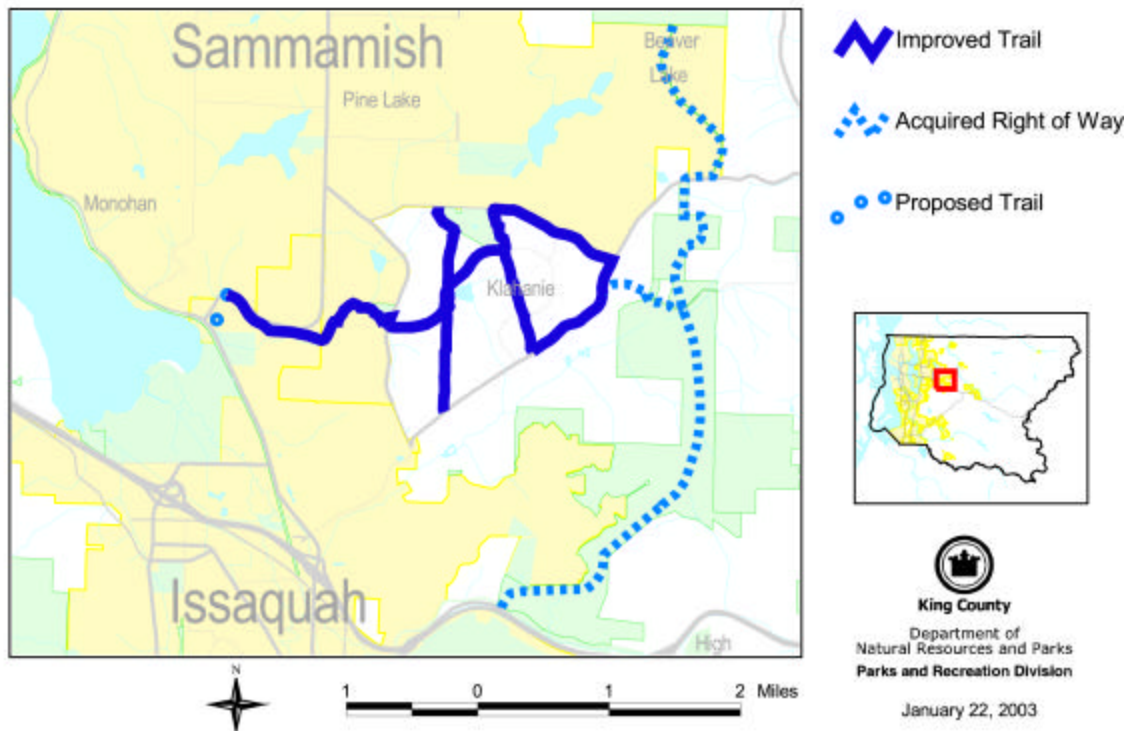
Location: The trail roughly parallels SE 43rd Way and Laughing Jacobs Creek from East Lake Sammamish Boulevard to the west entrance to Klahanie. Then parallels Klahanie Boulevard, thence north on the powerline trail to SE 32nd Street then follows the perimeter of Klahanie east and south to the Issaquah-Fall City Road, then eastward to the south entry of Duthie Park, through the park to Duthie Hill Road and the entry into the Trossachs development, thence northward to end within Soaring Eagle Park. A soft surface trail extension goes from Duthie Hill Park south through Grand Ridge Park to I-90.

Current ownership: The rights for this trail have been secured through all but two parcels west of 228th Ave. SE.

Current Conditions: The trail is currently unimproved for trail purposes except from Klahanie west to approximately 228th Ave. SE if extended.

Proposed Short-Term Development and uses: No short-term development is planned beyond the existing improvements.

Proposed Long-Term Development and uses: A 12' paved trail with minimum 2' shoulders from East lake Sammamish to Soaring Eagle Par for pedestrian and non-motorized wheeled uses. A soft surface trail from Soaring Eagle Park to I-90 for pedestrian, equestrian, and possible appropriate wheeled uses.



Issaquah-Snoqualmie Trail

Issaquah to Preston

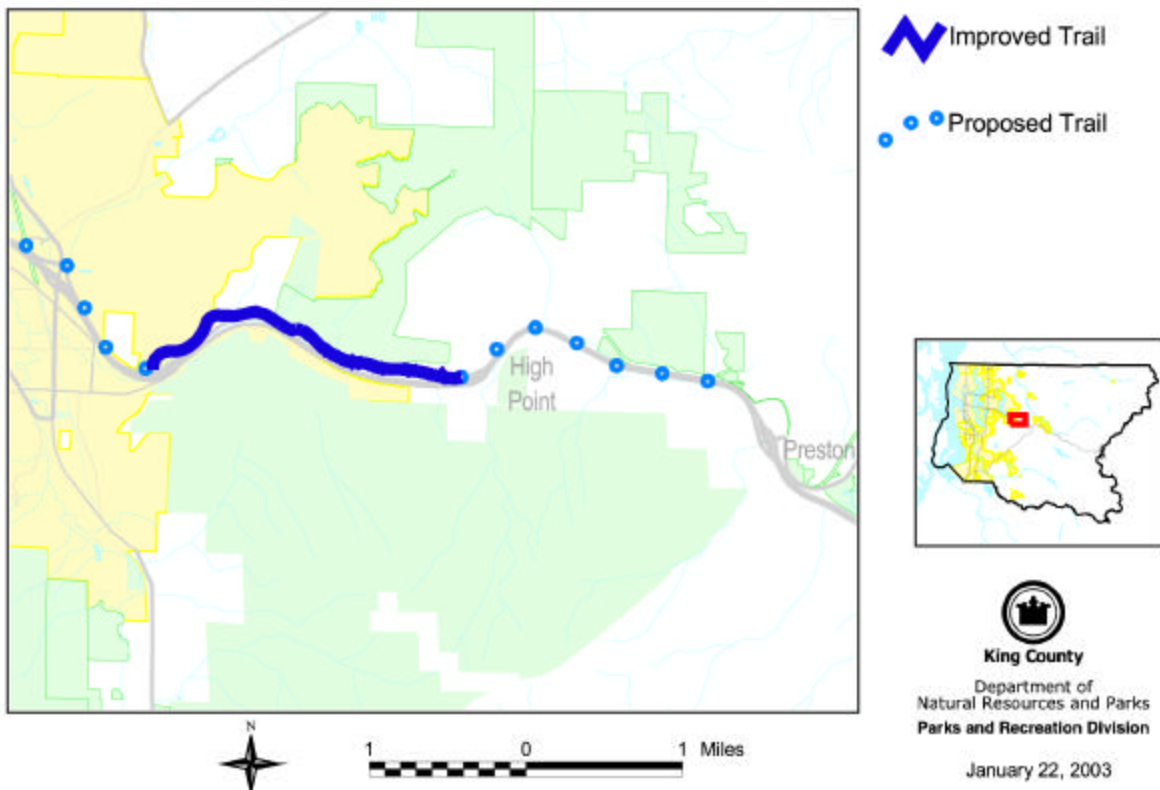
Location: This trail begins at the intersection of the East Lake Sammamish Trail with I-90. It parallels I-90 on the north side to beyond the Sunset interchange where it intersects with an abandoned railroad grade that continues to Highpoint. The trail continues from Highpoint to Preston along the north fence line of I-90 then crosses SE Highpoint Way to join the Preston Snoqualmie Trail at the west end of the Preston Industrial Center.

Current Ownership: The entire right-of-way proposed for this trail, including the old railroad grade, is owned by Washington State Department of Transportation.

Current Conditions: The route is unimproved for trail purposes except for the old railroad grade, which also is unimproved but suitable for trail use.

Proposed Short-Term Development and Uses: There is no short-term development except continued usage of the railroad grade for trail use. There are improvements being made in the Sunset Interchange to continue trail use through the interchange.

Proposed Long-Term Development and Uses: Long-term development includes a 10' wide paved trail with 2' wide shoulders and a parallel soft surface equestrian trail. Uses include pedestrian, equestrian, and non-motorized wheeled activities.



9B

Issaquah-Snoqualmie Trail Preston to Snoqualmie

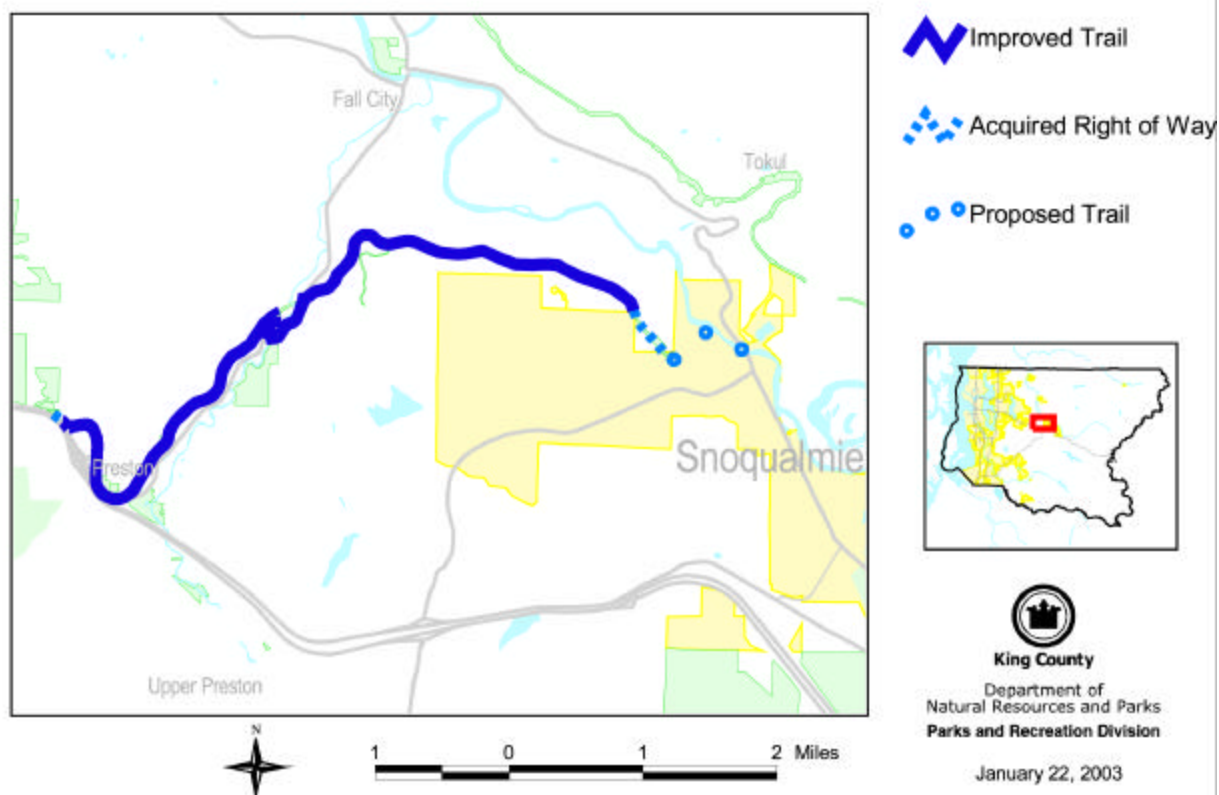
Location: In Preston, the trail goes through the Preston Industrial Park and then continues on an abandoned railroad R/W past the Lake Alice Road to a point south of Snoqualmie Falls. Here it shares a r/w with historic railroad use to a point east of the falls where it heads north, crossing the river, to join the Snoqualmie Valley Trail.

Current Ownership: The route is owned by King County from Preston to 2 miles east of the Lake Alice Road. From that point to the crossing of the river east of the falls, is owned by Puget Sound Energy, and the remainder by the Weyerhaeuser Company.

Current Conditions: The King County owned section is a 10' wide, paved trail. The remainder is unimproved for trail purposes with significant missing trestles.

Proposed Short-Term Development and Uses: There is no short-term development proposed. In the Short-Term it is hoped to secure agreements for future development.

Proposed Long-Term Development and Uses: Long-term development includes completion of a 10' wide paved trail with minimum 2' shoulders and a parallel soft surface equestrian trail. Uses include pedestrian, equestrian, and non-motorized wheeled activities.



Cedar-Sammamish Trail

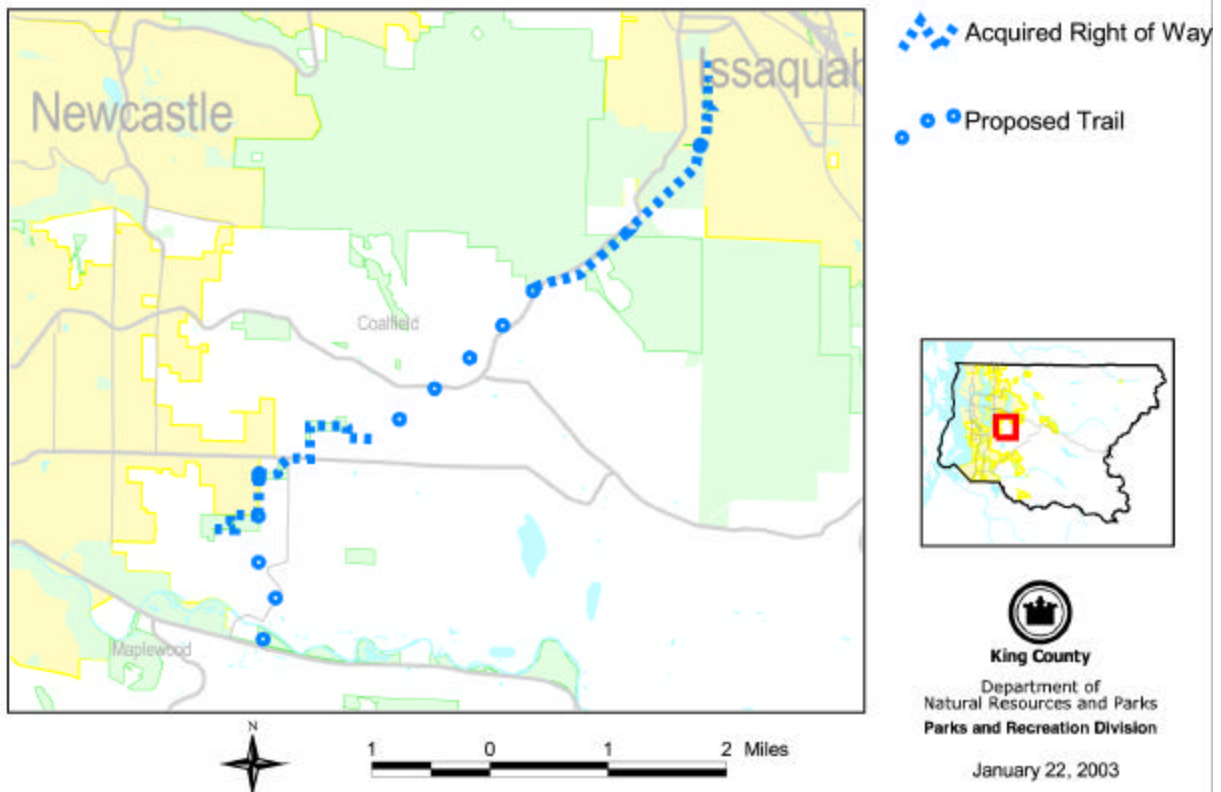
Location: The route extends from the Cedar River at 156th Ave. SE, when extended, generally paralleling 156th to SE 128th St, thence eastward through Coalfield Park to intersect a PSE r/w. It then follows the PSE r/w northeasterly to Issaquah.

Current Ownership: The section of the trail from the river to the PSE r/w is on street r/w, City of Renton, and county owned land. The remainder is owned by PSE, the county, City of Issaquah, and privately owned land.

Current Conditions: The route is generally unimproved for trail purposes.

Proposed Short-Term Development and Uses: Upon completion of acquisition, Short-Term development would include improving a route within the utility r/w from Cougar Mountain to May Valley, and where needed from Cougar Mountain to Tibbetts Park.

Proposed Long-Term Development and Uses: Long-term development includes a minimum 8' wide soft surface trail for pedestrian, equestrian, and appropriate wheeled uses.



Cedar River Trail

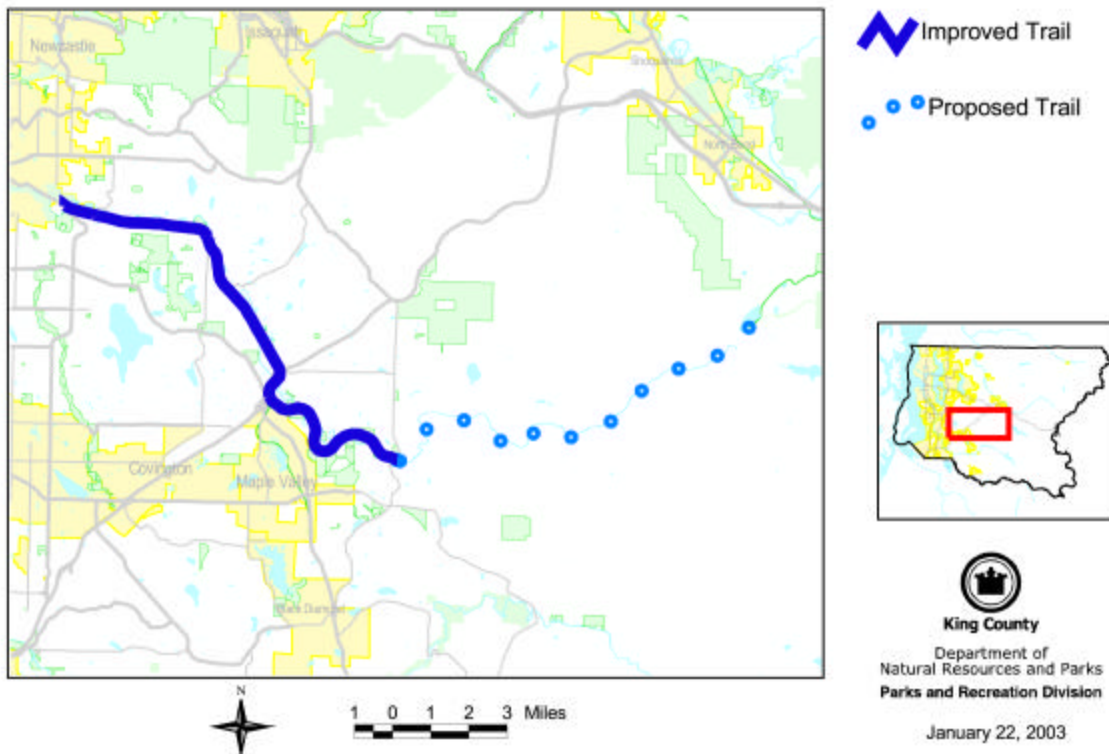
Location: This Trail follows the route of an abandoned railroad R/W from Renton to Cedar Falls. It parallels SR 169 from Renton to Maple Valley then roughly follows the Cedar River to Cedar Falls.

Current Ownership: The R/W is rail banked and is owned and managed by King County.

Current Conditions: All bridges are decked and side fenced. The western 5 ½ miles from I-405 to 196th Ave SE is paved. The surface from 196th to north of Maple Valley is unimproved. From Maple Valley to Landsburg the surface has been improved with a layer of crushed rock.

Proposed Short-Term Development and Uses: The segment from 196th to Maple Valley will be paved.

Proposed Long-Term Development and Uses: Long-term development includes installing a 12' wide paved trail with shoulders in the urban area with a 10' wide hard accessible surface in the rural sections paralleled by a soft surface equestrian trail. Uses would include pedestrian, non-motorized wheeled, and equestrian uses. Development east of Landsburg is dependent on public access to the City of Seattle Watershed. For water quality protection and other reasons, the City prohibits public access to the watershed. The watershed will remain closed unless water filtration and/or other processing techniques are implemented. King County will explore interim connectors along other routes.



Green River Trail

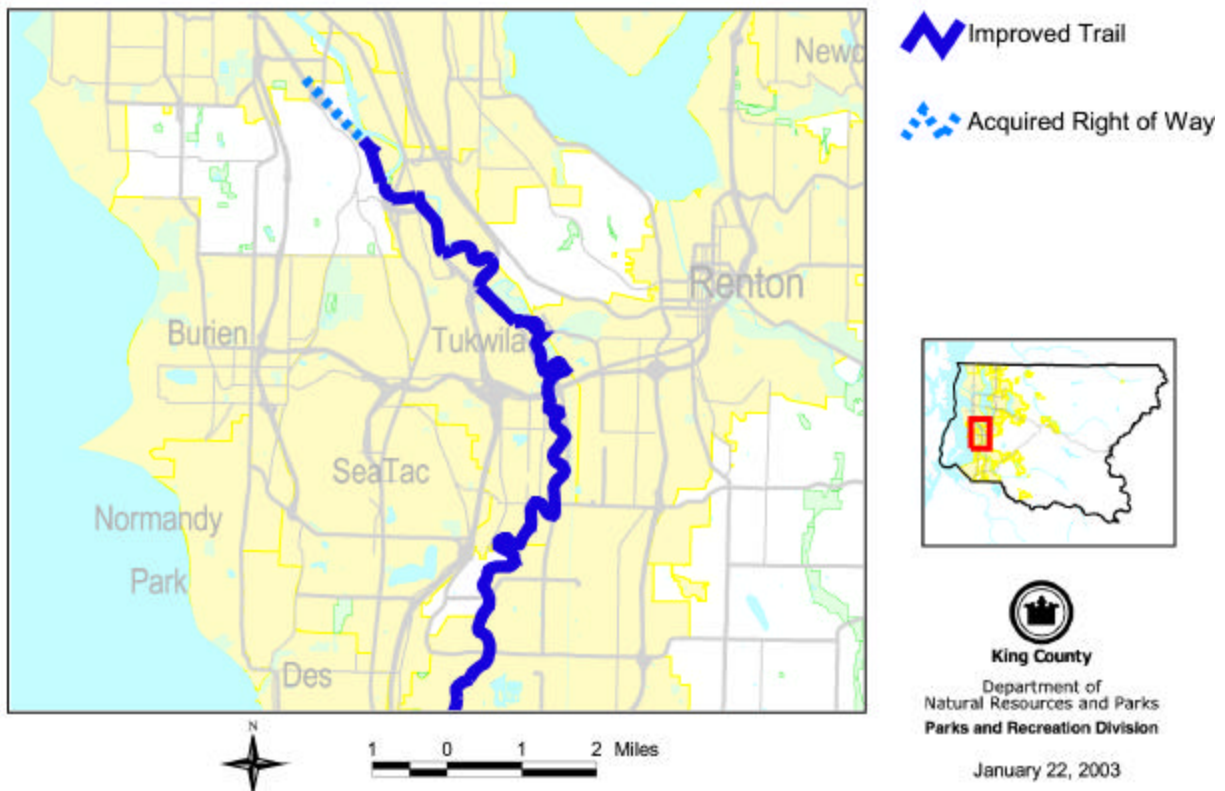
Location: The trail parallels the Duwamish and Green Rivers from the Seattle City limits to SR 18 east of Auburn.

Current Ownership: Approximately 95% of the proposed trail land is publicly owned by various agencies and jurisdictions.

Current Conditions: About 12 miles of the nearly 24 miles of this trail have been paved, with the most significant paved section through Tukwila into Kent. A signed bicycle route parallels a portion of the route through Kent.

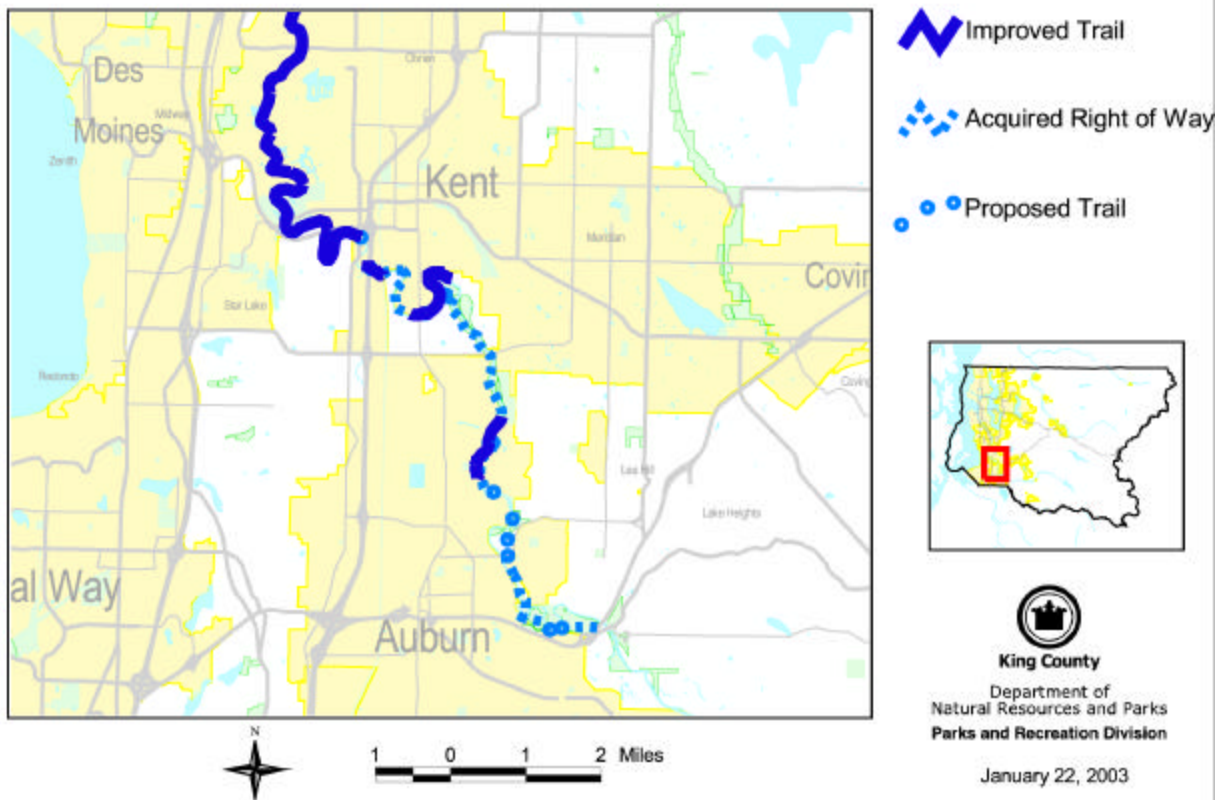
Proposed Short-Term Development and Uses: Development of a 12 foot wide paved trail with shoulders from 3rd Avenue S, in Kent, to S 277th Street. Uses include pedestrian and appropriate non-motorized wheeled uses.

Proposed Long-Term Development and Uses: Long-term development plans propose a 12 foot wide paved trail with 2-foot minimum shoulders along the entire route. The uses would include pedestrian and non-motorized wheeled activities.



Green River Trail

Pg.2



Interurban Trail

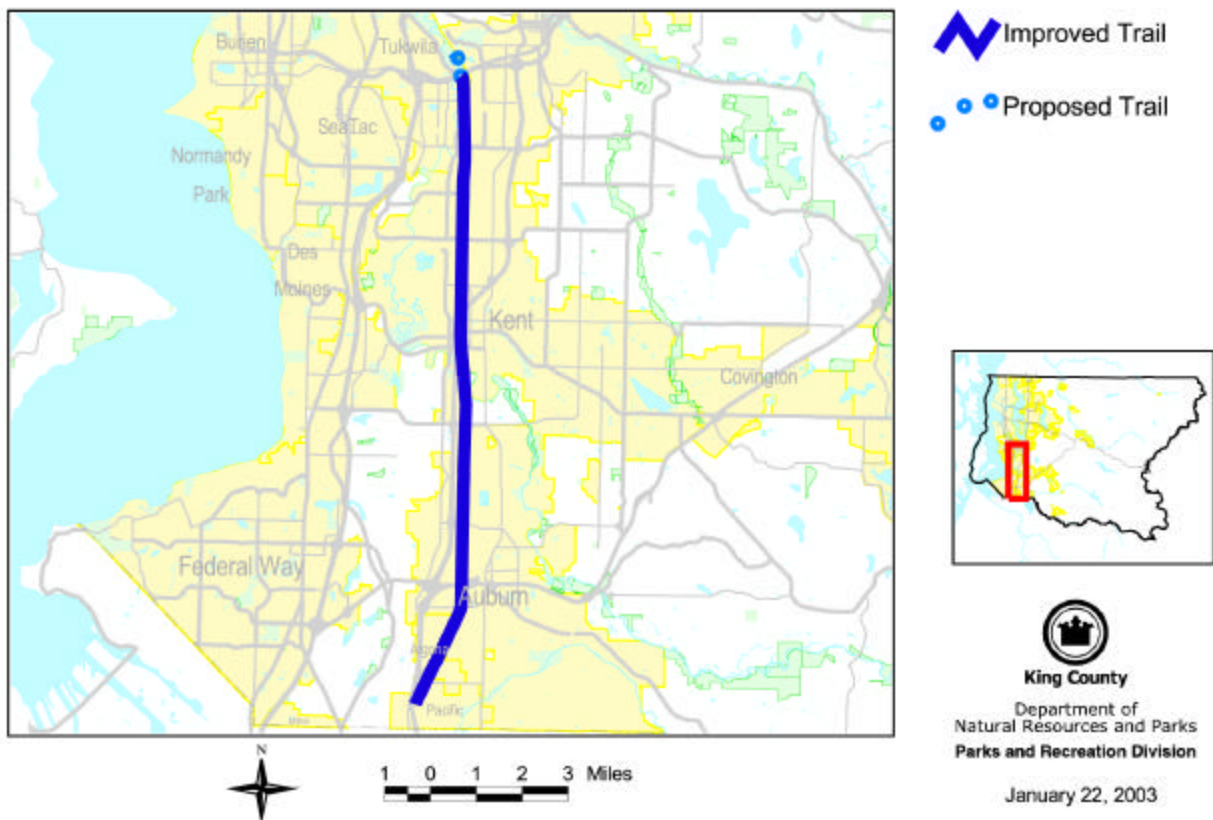
Location: This route follows the Puget Sound Energy R/W from Fort Dent Park to the Pierce County line in the City of Pacific.

Current Ownership: The route is on a recreational easement to the county on land owned by Puget Sound Energy.

Current Conditions: The route is improved with a 10 foot wide paved trail from I-405 in Tukwila to 3rd Avenue SW in Pacific.

Proposed Short-Term Development and Uses: No current short-term projects are planned for the trail.

Proposed Long-Term Development and Uses: Proposals include extending the trail from I-405 into Fort Dent Park, and from 3rd Avenue SW in Pacific to the Pierce County Line.



Upper Green River Trail

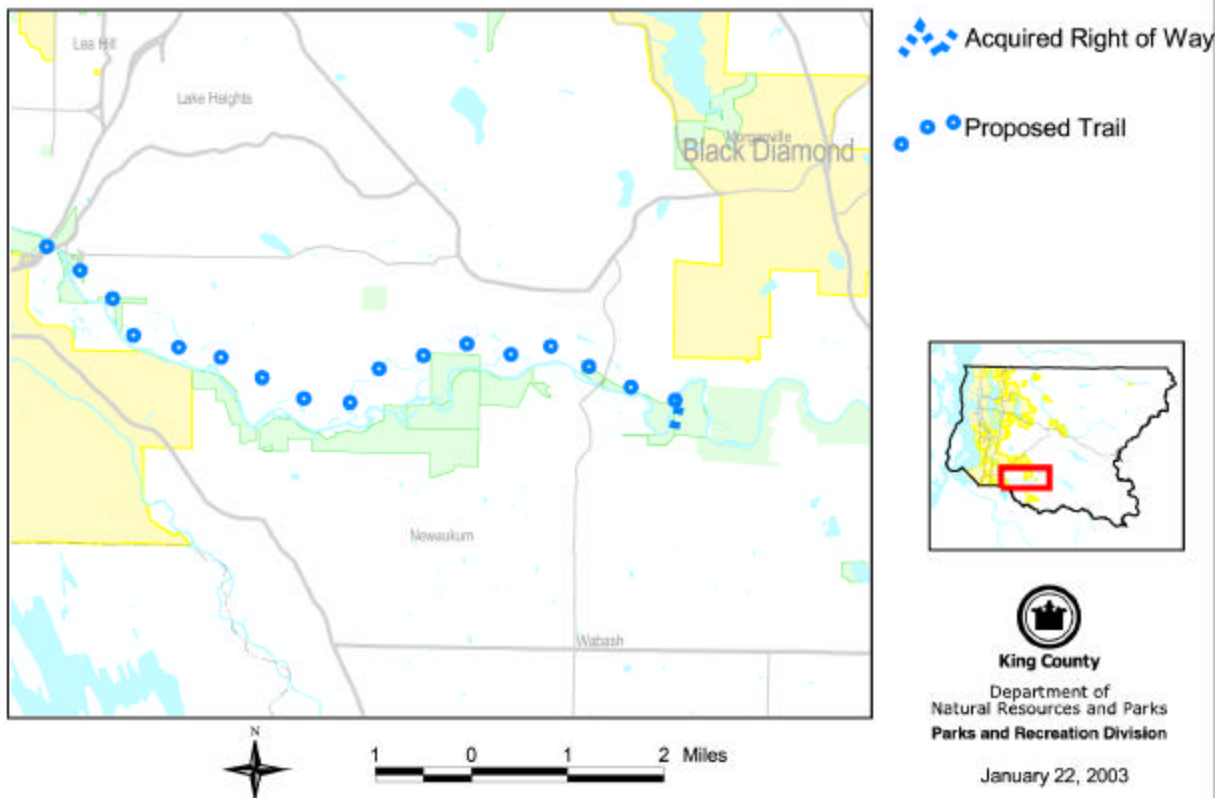
Location: This trail roughly parallels the Green River from SR-18, east of Auburn, to Flaming Geyser State Park and eastward to Kanasket.

Current Ownership: Over 50% of the route is in public ownership. The remainder is privately owned.

Current conditions: The route is unimproved for trail purposes.

Proposed Short-Term Development and Uses: There is no short-term plan for development or uses.

Proposed Long-Term Development and Uses: A minimum 10 foot wide paved trail with shoulders with a parallel soft surface trail from SR-18 to Flaming Geyser State Park is proposed. A soft surface, multi purpose trail is proposed from the State Park to Kanasket. Uses would include pedestrian, non-motorized wheeled, and equestrian activities.



Soos Creek Trail

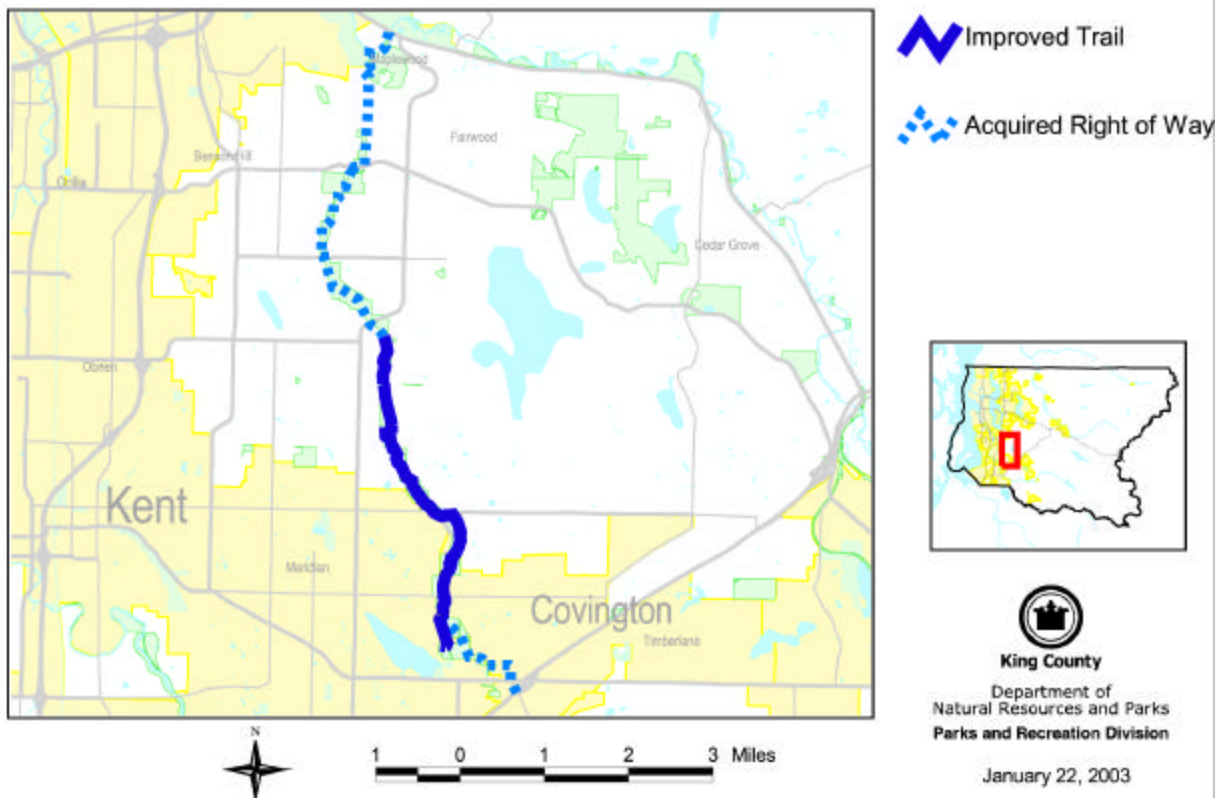
Location: This route generally follows Big Soos Creek from SR 18 to Petrovitsky Road then continues north to SR 169 and the Cedar River Trail.

Current Ownership: King County owns, or has easements, permits, or other rights, to the entire route except for two parcels to connect to SR 18.

Current Conditions: From just north of Lake Meridian Park to SE 208th Street is a 10 foot wide paved trail. The remainder of the route is unimproved for trail purposes.

Proposes Short-Term Development and Uses: Short-term development will extend the 10 foot paved trail from SE 208th Street north to 192nd Street for pedestrian and non-motorized wheeled uses.

Proposed Long-Term Development and Uses: Long-term development will be to extend the paved trail along the entire length of the trail from SR 18 to the Cedar River. Uses would include pedestrian, non-motorized wheeled over the entire length, and equestrian from 208th south to SR 18.



Lake Youngs Trail and Connectors

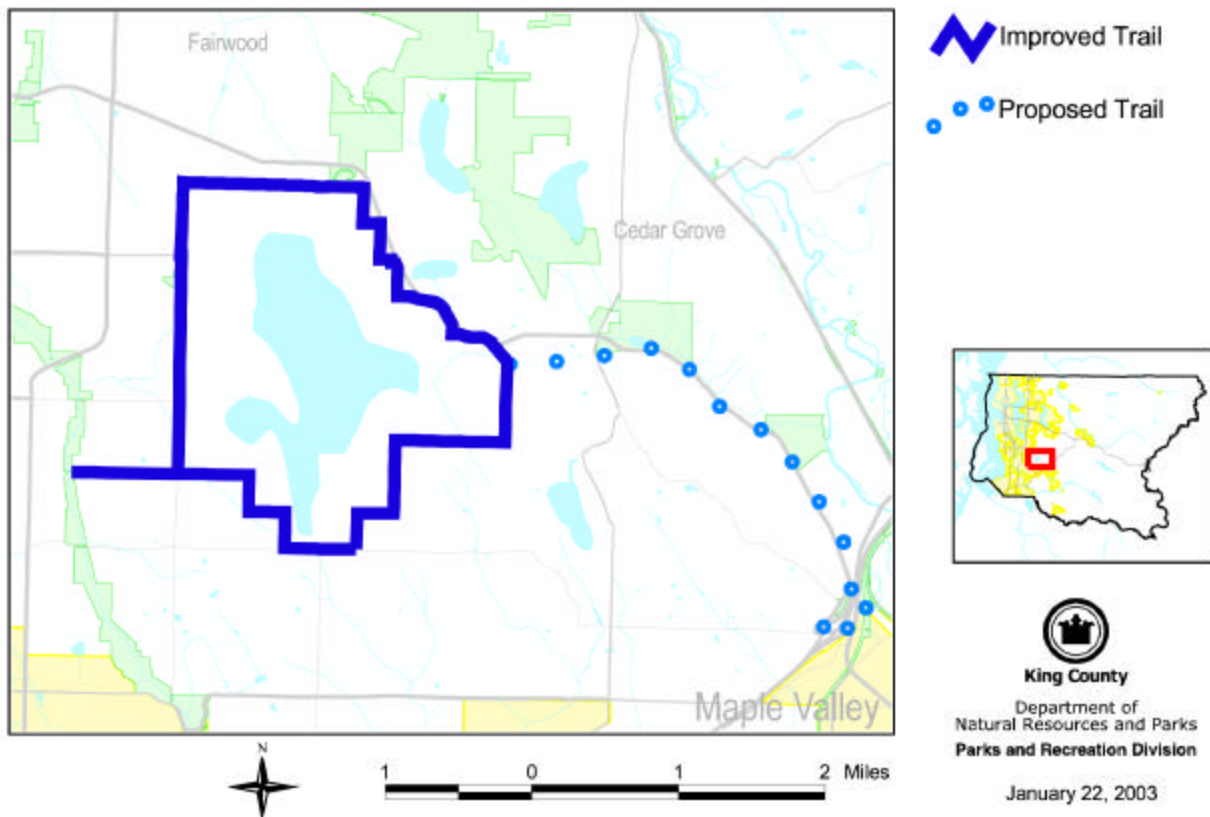
Location: The trail extends west from Maple Valley along the Cedar River Pipeline to Lake Youngs Watershed, around the perimeter of the watershed, then west along SE 216th to connect with the Soos Creek Trail.

Current Ownership: The Pipeline R/W and Lake Youngs are owned by Seattle Public Utilities. King County has a permit for a trail around the watershed. The connector with Soos Creek Trail is street R/W.

Current Conditions: A soft surface trail is currently developed around Lake Youngs and along the 216th connector. A service road follows the route of the pipeline.

Proposed Short-Term Development and Uses: No short-term development is proposed. However, an agreement with Seattle Public Facilities for use of the pipeline is proposed. Uses include pedestrian and equestrian, and appropriate wheeled uses.

Proposed Long-Term Development and Uses: Continue the soft surface trail and connectors with improvements to crossings where necessary. Uses remain the same.



SR 18 Trail

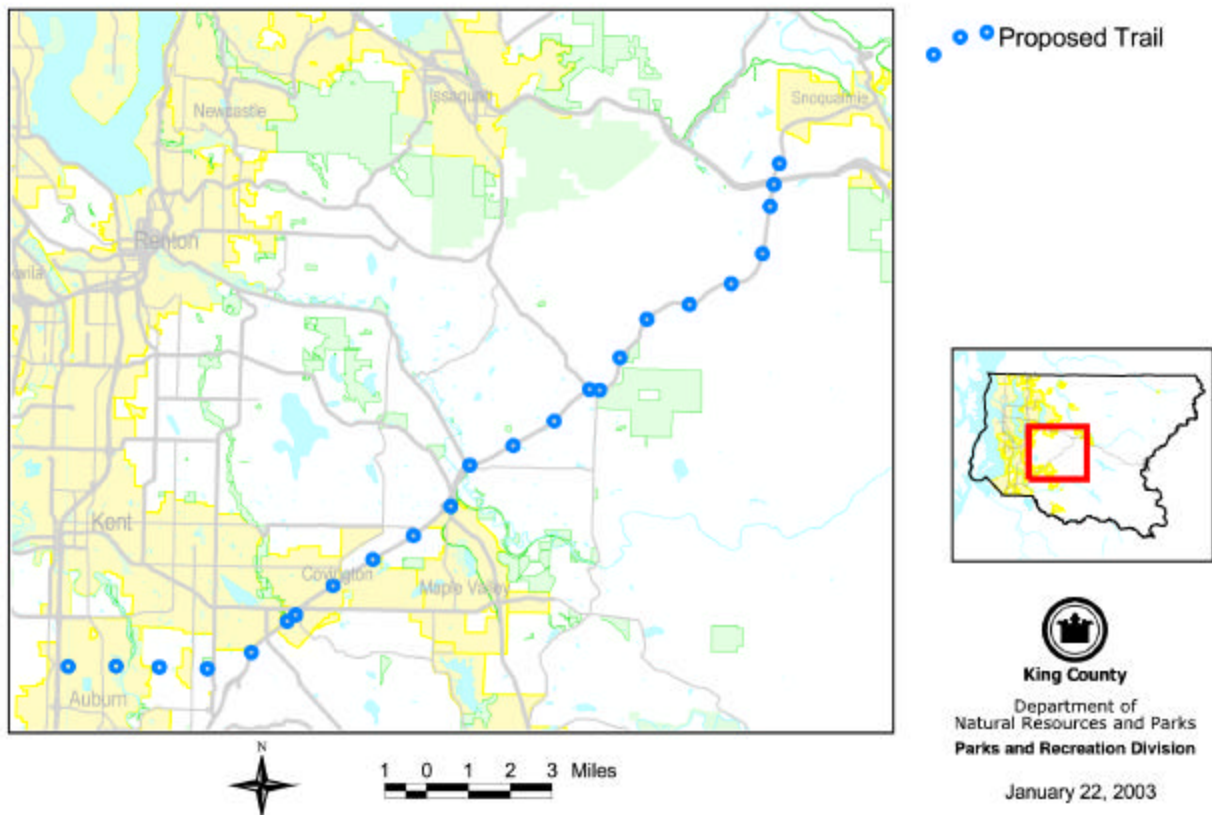
Location: This route is within or adjacent to the SR 18 R/W from South 304th Street to its intersection with SR 202 in Snoqualmie.

Current Ownership: The SR 18 corridor is owned by the State Department of Transportation. North of I-90, the route is owned privately and by the City of Snoqualmie.

Current Conditions: The route is unimproved for trail purposes except for most of the section north of I-90.

Proposed Short-Term Development and Uses: No short-term development is proposed.

Proposed Long-Term Development and Uses: It is proposed that parallel trails be developed. A 10 foot wide paved trail with shoulders and a parallel soft surface equestrian trail. Uses would include pedestrian, non-motorized wheeled, and equestrian uses.



Green to Cedar Rivers Trail

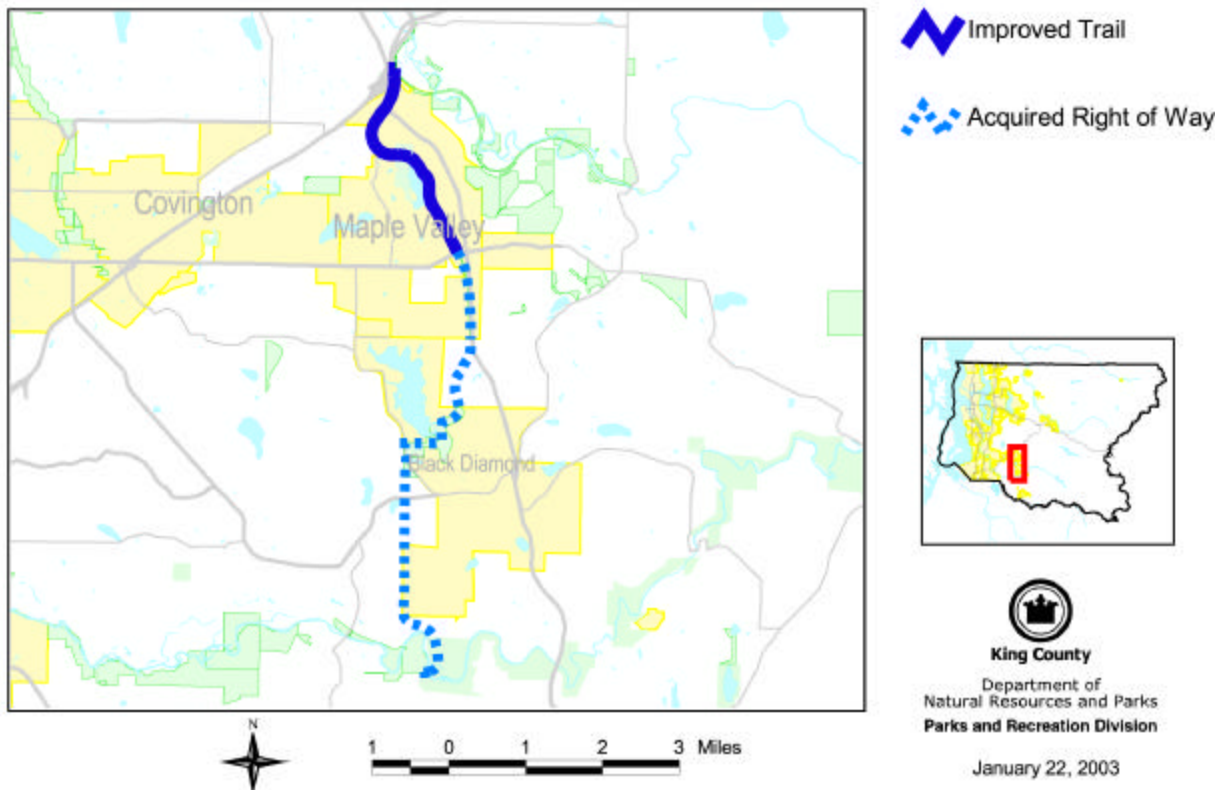
Location: This trail follows an abandoned railroad R/W roughly paralleling SR 169 from Maple Valley to Black Diamond, then southwesterly to Lake Sawyer then south to Flaming Geyser State Park.

Current Ownership: King County currently owns or has agreements for use of the entire route.

Current Conditions: The route has been improved from the Cedar River south to the SR 516. The remainder is unimproved for trail purposes.

Proposed Short-Term Development and Uses: There is no proposed short-term development.

Proposed Long-Term Development and Uses: A 10 foot wide paved trail with shoulders and a parallel soft surface pedestrian/equestrian trail are planned, including replacement of a bridge over BNSF tracks at Henry's Switch and possibly another over SE291st Street. Uses include pedestrian, equestrian, and non-motorized wheeled uses.



Landsburg-Kanaskat Trail

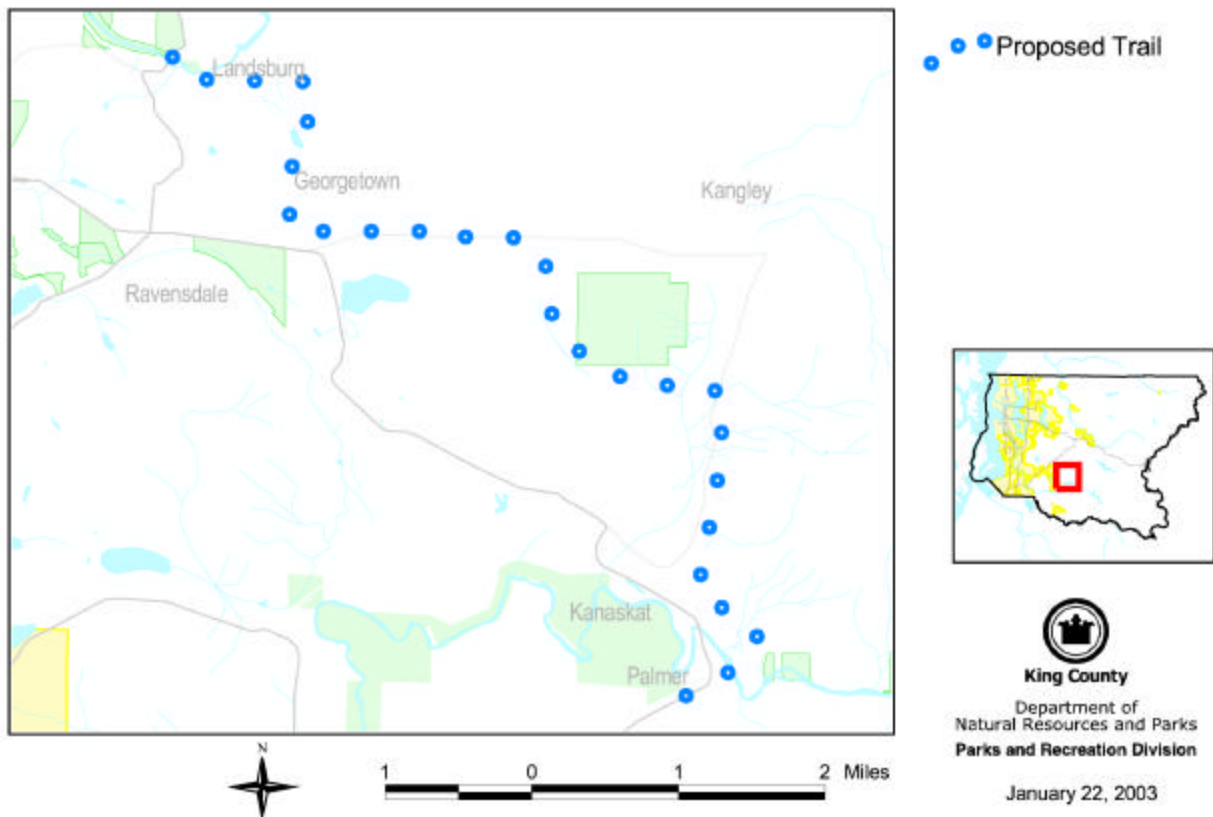
Location: This trail roughly follows the perimeter of the Cedar River Watershed to Georgetown Park thence to the south of Sugarloaf and eastward to an abandoned railroad R/W east of Kanaskat Kangley Road which then goes south to Kanaskat.

Current Ownership: Much of the route is on publicly owned land. The land owned between Georgetown and Sugarloaf and the R/W south to Kanaskat is privately owned.

Current Conditions: None of the route is currently improved for trail purposes, although the R/W is used as a trail.

Proposed Short-Term Development and Uses: Reach agreement for trail use of publicly owned lands and acquire rights on private lands needed for connection. No short-term development is proposed although portions of the route may be improved for trail use.

Proposed Long-Term Development and Uses: Long-term development will include a 10 wide paved trail with shoulders and a parallel soft surface pedestrian/equestrian trail. Uses include pedestrian, equestrian, and non-motorized wheeled uses.



Enumclaw Plateau Trail

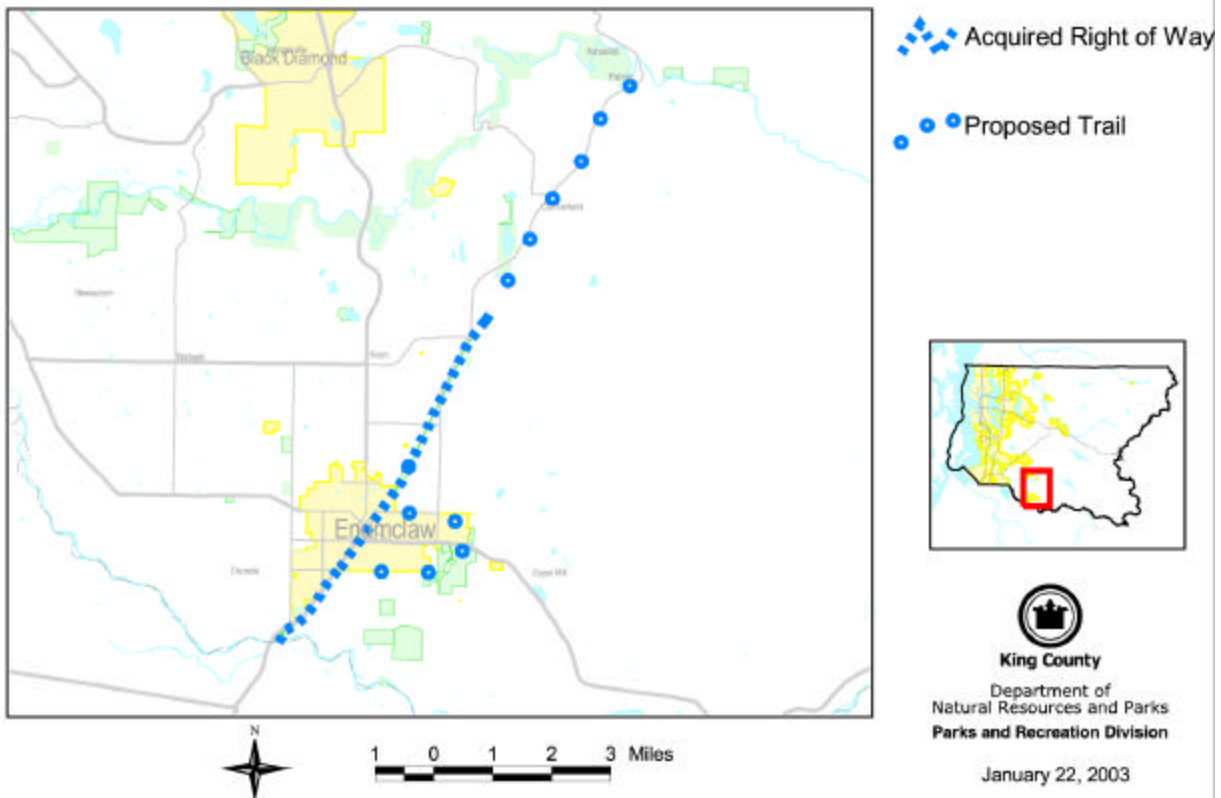
Location: The route follows a railroad r/w from the White River north to the Green River at Kanasket.

Current Ownership: The r/w is owned by King County south of the Veazie Quarry site. Burlington Northern Santa Fe Railroad owns the r/w north of the quarry. The City of Enumclaw owns the r/w within the City.

Current Conditions: The route is generally unimproved for trail purposes. The section of the r/w north of the city to SE 416th has been used informally for trail purposes.

Proposed Short-Term Development: Includes opening the trail south of Veazie Quarry for soft surface use, with adequate signs and highway crossing treatment. Uses would include pedestrian, equestrian and appropriate non-motorized wheeled vehicles.

Proposed Long-Term Development: Will include a 10' wide paved trail with shoulders and a parallel soft surface pedestrian/equestrian trail. A new trail bridge will be established across the White River. A soft surface connection around the city connecting to the Enumclaw fairgrounds and park may be established.



CHAPTER V

Trail Management

When King County opened its first developed Regional Trail in 1975, and built it 10 feet wide exceeding the then current AASHTO recommended width guidelines by 2 feet. The extra width, it was felt at that time, would take the trail well into the future before management problems had to be dealt with due to user conflicts and crowding on the trail. The future lasted about 4-5 years. The popularity of the trails far exceeded expectations. The magnitude of the use and unexpected types of use on the trails led to user conflicts relatively quickly. We also hadn't anticipated some of the user conflict circumstances that trail users have had to face since then, like uncontrolled dogs, fast moving bikes, swerving roller-bladers. It was many more years, 1988, before a trail use ordinance was passed to deal with some of the more serious user issues. For instance, to our knowledge it was the first time a speed limit had been imposed on a trail in the United States. Along with the new ordinance, the county provided two sheriff's officers to patrol the trails on motorcycles to enforce the ordinance, which was just one aspect to trail management.

Managing a trail system is not too unlike managing a road system. The system is built to meet or exceed guidelines for development that are to provide safe use of the facility, it is maintained to continue that safe use, the use of the facility is guided by a set of laws and codes to minimize circumstances and patterns of use that could lead to conflict, and those codes are reasonably enforced. Previous chapters have discussed the building and maintaining of the system, this chapter will look at the laws and codes, enforcement, and other management issues that would lead to provision of a safe, non-conflicting trail experience.

Existing Ordinance

Much trail use compatibility between all the modes of use on the trails relies on common sense and courtesy, both of which cannot successfully be regulated. In an effort to influence those trail users with little to no common sense or common courtesy, the King County Council passed a trail use ordinance on May 23, 1988. The ordinance includes a User Code of Conduct, and has since been codified in the King County Code in section 7.12.295. Pertinent sections of the code follow:

- A. No person shall travel on a trail at a speed greater than is reasonable and prudent under the conditions and having regard to the actual and potential hazards then existing... Travel at speeds in excess of 15 miles per hour shall constitute in evidence a prima facie presumption that the person violated this section.
- B. No person shall travel on a trail in a negligent manner....
- C. For the purposes of this section "travel" shall be construed to include all forms of movement or transportation on a trail, including but not limited to foot, bicycle, horse, skateboard, and roller skates.

- D. Every person traveling on a trail shall obey the instructions of any official traffic control device applicable thereto placed in accordance with applicable laws unless otherwise directed by a police officer.
- E. No motorized vehicles shall be allowed on King County trails...
- F. Regional trails, local trail corridors, and paved pathways are open to all non-motorized users unless otherwise designated and posted
- G. Every person who shall use or travel on a trail shall obey the Model Trail User Code of Conduct.
- H. Model Trail User Code of Conduct:
 - 1. USING A TRAIL. Every person using a trail shall stay as near to the right side of the trail as is safe, excepting those movements necessary to prepare to make or make turning movements, or while overtaking and passing another user moving in the same direction.
 - 2. REGARD FOR OTHER TRAIL USERS. Every user shall exercise due care and caution to avoid colliding with any other trail user. All users shall travel in a consistent and predictable manner.
 - 3. GROUPS ON TRAIL. No group of trail users, including their animal(s), shall occupy more than one half of the trail as measured from the right side, so as to impede the normal and reasonable movement of trail users.
 - 4. AUDIBLE SIGNAL WHEN PASSING. Every user shall give an audible warning signal before passing another trail user. The signal must be produced in such a manner as to allow adequate time for response. The signal may be given by voice, bell or horn.
 - 5. OVERTAKING TRAIL USERS ON THE LEFT. Any trail user overtaking another trail user proceeding in the same direction shall pass to the left of such overtaken user at a safe distance, and shall stay to the left until safely clear of the overtaken user.
 - 6. ENTERING AND CROSSING TRAIL. Trail users entering or crossing the trail at uncontrolled points shall yield to traffic on the trail.
 - 7. LIGHTS ON TRAIL USERS. All bicyclists using the trail from one-half hour before sunset to one-half hour before sunrise shall equip their bicycles with a headlight visible 500 feet to the front, and a red or amber light visible 500 feet to the rear.
 - 8. REGARD FOR EQUESTRIAN USERS ON TRAIL. Trail users shall exercise extreme caution to prevent frightening horses with sudden noise or movement and shall always yield right of way to horses and warn equestrian users when approaching from behind and attempting to pass.
 - 9. REGARD FOR ADJACENT PROPERTY OWNERS. Trail users should respect private lands adjacent to county trails and should stay on trails to avoid trespassing on or interfering with adjacent private property. (Ord. 12003 § 8, 1995; Ord. 8518 § 1, 1988).

Enforcement and Presence

On roadways, a reasonable expectation on the part of the road user is that the laws and codes established for use of that facility will be enforced. That is not true of many trail users. King County Parks Division staff does not have enforcement authority, training, or equipment for enforcement of trail codes. The responsibility for such enforcement is within the King County Sheriff's Office. That agency has not had the personnel to provide regular patrolling of the trail system that would lead to an expectation on the part of the trail user that trail regulations would be enforced at all.

To provide some enforcement along sections of the system within incorporated jurisdictions, it may be desirable to work with the enforcement agencies within the cities to provide trail code enforcement. Several cities are interested in doing so, although the specific mechanism that would allow that to occur is still being agreed upon as of this writing. In simple terms, the two step process requires the city to adopt the King County trail code then reach an enforcement agreement with the King County Sheriff's Office, each more complex in the execution than in the elocution associated with it.

Another important aspect of the management of trail use is to make sure the public is aware of the rules associated with the use of trails. This should include placement of "trail use" signs at all trailheads and major access points. These would include a synopsis of the trail code. Regulatory signs along the trail should also enforce the rules much the same as regulatory signs along a highway. In addition, a trail rules brochure could be developed that would be available wherever trail maps are available, at bike shops, trailheads, and to organizations whose members use the trails.

An increased official presence on the trail could also help enforcement and well as provide a service to the user public. A presence such as our 'Park Ambassadors' who may become "Trail Ambassadors", or as they're called in other jurisdiction's, programs 'trail rangers'. Whatever they are called, these are volunteers that are trained to meet the public and who can offer information, remind people of the rules, provide assistance for a variety of situations, and, perhaps as important as anything, simply to be seen. Other jurisdictions such as Pinellas County in Florida, and Jackson County in Oregon, have used trail patrols such as this with great success as judged by the comments they have received from their user public. They are specifically trail oriented in their training and patrol areas and are identified with special vests and/or shirts with patches. Admittedly, in both these other jurisdictions, they have a more limited inventory of trails than King County. Yet, it seems a viable way to provide more official presence onto the King County Trail system.

Trail Use Surveys

The King County trail system is a significant investment of county resources. Subjectively, we know that some trails are very popular over a wide segment of the populace. However, without hard data, we are only guessing at user levels, who our trail users are and where they are drawn from. The surveys provide information on levels of non-reported accidents, and other demographic information useful for making trail related decisions.

Such information has been valuable in the preparation of State and Federal grant applications. Information from trail user surveys aided in the preparation of the Trail Use Ordinance mentioned earlier and has been necessary in legal hearings both for acquisition justification and development. Solid user information is invaluable in public meetings and hearings and to correct misinformation and to answer questions.

Information gathered from such surveys is useful for these reasons and more. However, to remain useful, the data must be continually updated. King County has conducted trail counts and user surveys every five years since 1980. We have been able to do so with the pro-bono aid of private organizations and individuals as well as the University of Washington so, to date, it has not resulted in a large investment on the part of the county. To continue to have such information at hand, the county should continue to plan and make provision for these surveys to continue into the future.

Another reason for the five-year period in the user counts and surveys, is the large numbers of people involved who have to attend survey stations along the trails during the time the counts are ongoing. The logistics involved and the number of people required have not allowed us to acquire information on as many of our trails as we would like, nor as often. One aspect of this endeavor may possibly be solved by the use of remote electronic trail counters.

There are a variety of counters on the market using a variety of technologies. They include infrared, heat sensing, pressure pads, and others. All are considered portable, weather proof, and purportedly, vandal resistant. The use of these would allow King County to gather information on users levels at all times of the year on all of the trails. This is information that has only been 'guessed at' using various formulas for generating numbers and extrapolating from counts elsewhere, both of which may be under counting or over counting.

The recommendation of this plan is to acquire such devices to provide trail user information. It will be just as important in the future to gather trail user counts and information over a wider range of trails than we have been able to acquire in the past.

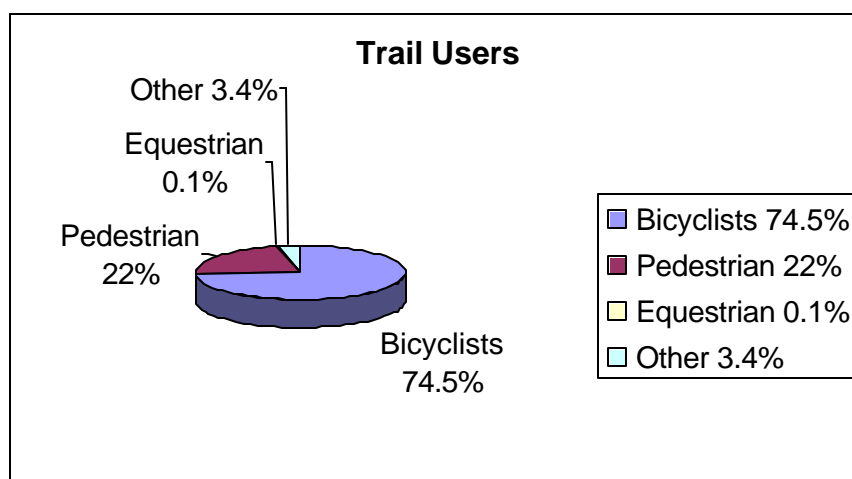
Trail User Profile

We have attempted through the years to better know who our trail users are through the use of trail surveys handed out on our trails during our survey years, i.e., years ending in 5 or 0. The following trail user statistics were gathered from literally thousands of responses returned during our surveys since 1985.

King County's regional trails are used by the widest array of users. While there are children in strollers who could be counted as users, the youngest reported user in our surveys was 2 years old. The oldest is 90. The average age of all users, which has remained consistent through the years from 1985 to 2000, is in the upper 30's. It ranged from a low of 37.1 years in 1985 to a high of 38.7 years in 1995. Women make up over 43% of the respondents, up from 33% in 1985, which we also believe is reflective of the trail use itself.

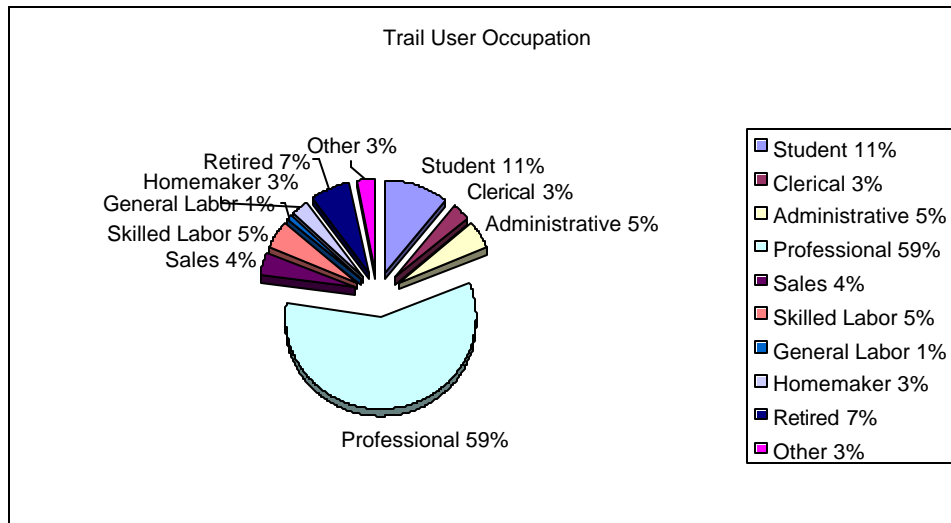
The reported income levels of trail users through the 1990 reporting period were roughly equivalent to the national median incomes. Since that time, reported median incomes have exceeded the national average by 15% to over 22%. The largest occupational category reported for trail users was “professional”, which on weekend days was consistently reported around 60% of our users. During the week, the level of use by professionals dropped to around 50+% with the difference being made up by “students”, the second highest category after professional. The student category ranged from 10% on weekend to as high as 25% during the week.

Cyclists make up 75% of users while pedestrian use is over 20%. The reason given for use of the trails is overwhelmingly recreational on weekends, 85+%. The split is more evenly split, almost 50-50, between recreational/exercise and a commuting purpose, i.e., going to school, work, or shopping during the week



The average user has made use of the trails for over 7 years, and over half of trail users arrive at the trail on their bikes. There is again nearly a 10% shift from weekend use to weekday use on mode of arrival. During the weekend, just over 50% of users arrive on bikes and over 30% arrive by car. The numbers change to nearly a 60% bike and 20% car rate during the week. They average a ride between 3.5 to 5 miles to get to the trail and once on it average between 11 and 18 miles on the trail if biking and between 4 and 5 miles if walking.

Besides the modes of use, our surveys have also shown us a little more about who the people who use trails are. The following table graphically shows employment as declared on the surveys forms returned.



CHAPTER VI

Reflections on Future Trail Issues

When King County was planning its first trails in the late 60's and early 70's, "fat-tired" bikes referred to the ones kids used to ride, no one had yet heard of lycra, roller skaters had no blades, Microsoft was a budding idea, the ten-speed bike was king, and only 36% of Americans said they walked for pleasure and less than 10% said they bicycled. The only mobile phones were attached to high-priced cars and were really two-way radios that looked like phones. The top leisure time pursuits were driving for pleasure and picnicking, both hovering just over 50% participation, according to surveys taken around that time. The population of the United States at the time of the survey was around 200 million, and in 2000 it had grown 38% to 280 million. The population of King County in 1970 was 1,160,000 compared to 1,737,000 in the last census; a growth of 50% over the same period. That is equivalent to adding the population of the City of Seattle to King County in 30 years. Interestingly, that population was all added outside Seattle's city limits, as Seattle's population has remained relatively static.

These are dramatic increases in population, and as such, one would expect a concurrent rise in recreational pursuits. But the rise in the numbers of trail users was much higher than the rise in population. A national survey of what recreational activities were participated in by Americans was taken again in 2001; see comparative table below, and makes an interesting comparison to that earlier one taken in the 60's. Walking for pleasure had zoomed to the top of the participation spectrum at an 83% participation rate. Bicycling rose to a nearly 40% participation rate. Coincidentally, driving for pleasure and picnicking remained nearly unchanged. It was not simply a shifting of participation in activities that accounted for the increases, as all activities except playing outdoor games and sports showed a rise in participation, but it showed dramatic increases in recreational pursuits by a broader range of Americans. While the highest participation rate was for walking for pleasure, it had a 2.3 fold increase over the 60's rate, the increase for bicycling was over a 4.3 times the 60's rate.

AMERICAN RECREATION THEN AND NOW

Percentage of persons 12 or older participating in each of 23 outdoor activities, with highest difference at top.

Activity	1960-61	2000-01
Nature study and walks	16	76.3
Walking for pleasure	36	83.7
Hiking	6	43.1
Attending outdoor concerts, dramas, etc.	9	40.2
Bicycling	9	39.3
Camping	8	34.8
Attending outdoor sports events	29	51.4
Sightseeing	42	53.2
Snow skiing	2	11.5
Canoeing	2	11.2
Other boating (motor, rafting, etc.)	22	31.0
Fishing (warm, cold and salt water)	29	35.2
Mountain climbing	1	6.6
Horseback riding	6	9.4
Sailing	2	5.4
Waterskiing (not including jet skiing)	6	9.2
Sledding or tobogganing	9	12.2
Picnicking	53	55.2
Driving for pleasure	52	53.2
Ice skating	7	8.0
Swimming (pool and natural water)	45	45.3
Hunting	13	13.0
Playing outdoor games and sports	30	23.6

What does this mean for our trails now and into the future? All of the existing trails we have were planned and thought about between 15 and 30 years ago. The kind of explosive growth of users as shown in the surveys was not anticipated and the guidelines for development always seem to lag behind the use levels experienced. So, we are already behind times in accommodating the array of users on some of our trails. Because of the U.S. Surgeon General's and the Center for Disease Control's continued emphasis to get Americans more active for health and to fight the continued trend toward obesity in America, we can only expect users and the demand for trails to increase.

Another trend that may affect users patterns on the regional trails is the large population group of post-war baby boomers approaching retirement age. It is expected that as this group reaches retirement age and has even more leisure time available to them, it is likely that they will continue the healthful trend of continued activity into those retirement years. This could possibly mean rising rates of use outside of our traditional peak times of weekends and holiday uses, and generally a potential rise in uses at all times.

With the guidelines for development of trails already lagging behind levels of use, it may be necessary to think ahead of what future guidelines may be in order to address increased capacity and safety into trail designs. The trend to date has certainly been toward increased separation of modes of use. Will that continue into the future? Will it lead to increased restrictions on some modes of use? What will it mean for future enforcement efforts? To provide for these increased demands and management costs during a time of shrinking budgets will continue to present a challenge to trail providers and King County into the foreseeable future.

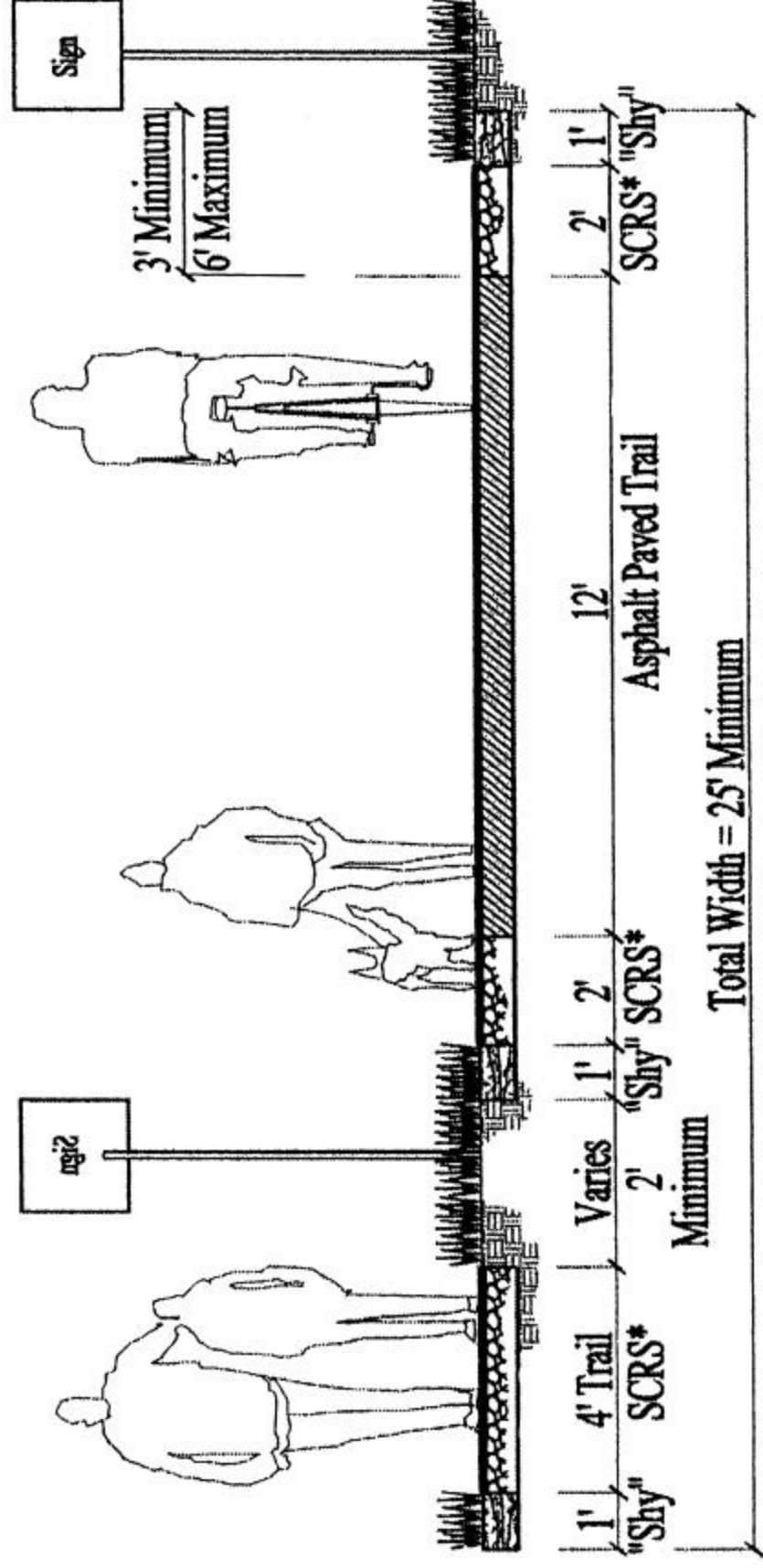
Along this same vein, one can only see that the pressures on trail managers will also increase from other forms of “non-motorized” users. As in the late 60’s and early 70’s when we didn’t foresee in-line skating and the proliferation of electric scooters, what aren’t we seeing now? An example of one technology that is already on the streets, or sidewalks, and soon to demand space on a trail near you, is the Segway. This digital-gyroscopic stabilization and steering vehicle is fairly expensive right now, but in the future may drop in price to become relatively affordable to a broad spectrum of the public. What about motorized roller skates? Is a mag-lev skateboard in the future? Regardless, there will be new devices we haven’t yet identified that will be demanding their share of the recreational and alternative transportation space.

It is true that these devices and their offspring are not what was behind the development of trails. But how long can the barbarians at the gate be held off, or should they even be held off? These devices generally are no more dangerous, nor take up any more space than bicycles. They create neither additional noise or pollutants. They add a whole potential new user group, and therein lies the rub. How can they be accommodated on already crowded trails? It seems to suggest that additional thought has to be given for designs that will accommodate a wider variety of users, which leads again to greater separation of modes of use. It also begs the question, are our existing corridors wide enough to accept greater separation of uses? Are we making decisions now that will impact our ability to provide wider or separate facilities in the future? The King County regional trails has a great history to date, but the future holds even greater promise and excitement to even more King County citizens and visitors.

APPENDIX A

Potential typical trail cross sections
For future regional trails

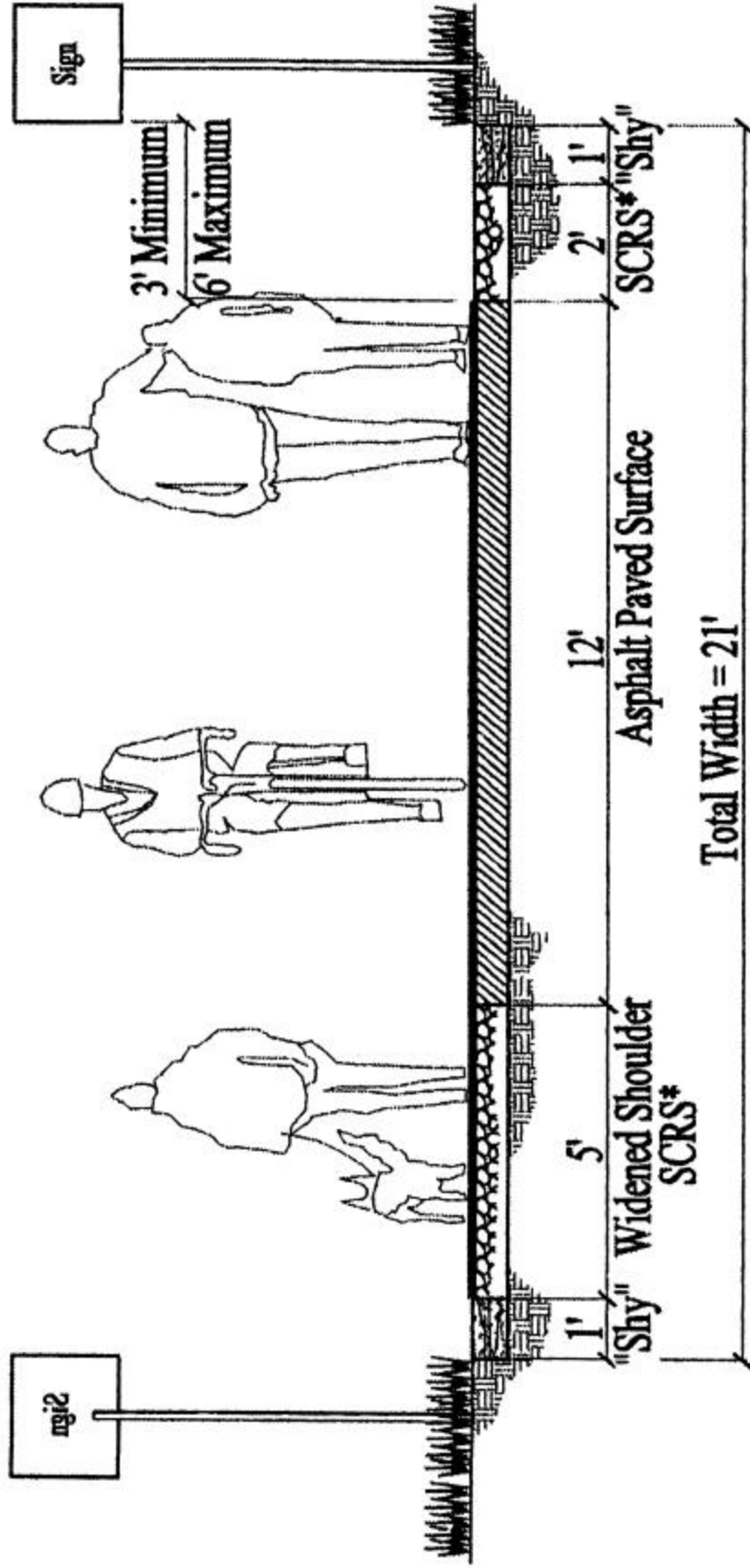
King County Parks Proposed Trail Sections



Alternative 1

*Stabilized Crushed Rock Surfacing

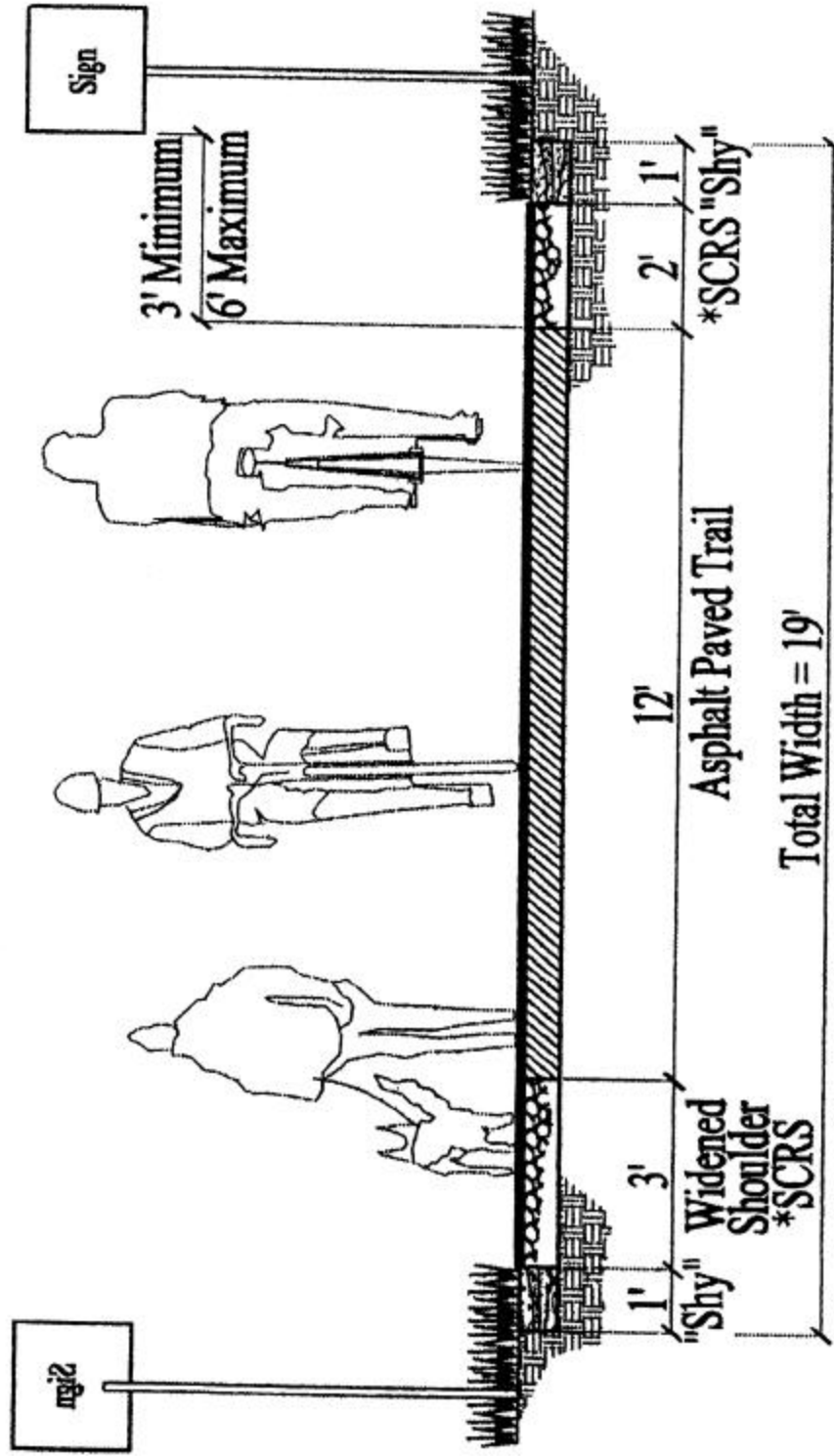
Scale: 3/4" = 1'-0"



Alternative 2

Scale: 3/4"=1'-0"

* Stabilized Crushed Rock Surfacing



Alternative 3

Scale: 3/4" = 1'-0"

*Stabilized Crushed Rock Surfacing